

IBM CICS® Explorer Tools: The Whole Exceeds the Sum of the Parts

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IBM CICS® User Conference 2009

Introduction

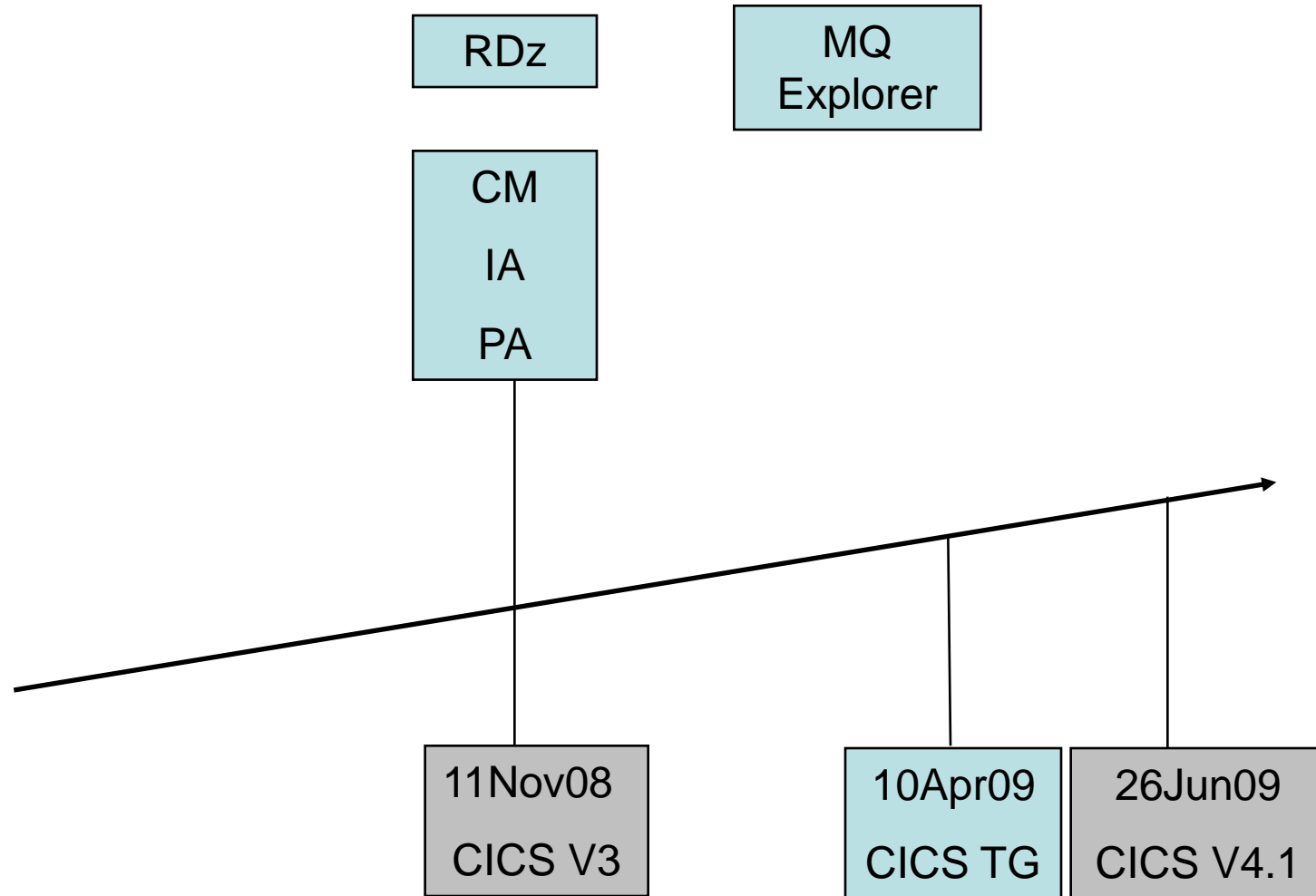
This two part session will look in depth at the CICS Explorer, discussing its architecture, its construction, the state of what's available now, as well as plans and directions for its future.

The session will also cover how IBM's key CICS Tools have been built on top of the Explorer framework, delivering Interdependency Analyzer (IA) Explorer, Configuration Manager (CM) Explorer and Performance Analyzer (PA) Explorer capabilities.

Agenda:

- A (very) brief introduction to Eclipse (part 1)
- Introduction to the CICS Explorer (part 1)
- **Introduction to the CICS Tools Explorer (part 2)**

Explorer Integration



CICS Explorer – Integration Platform

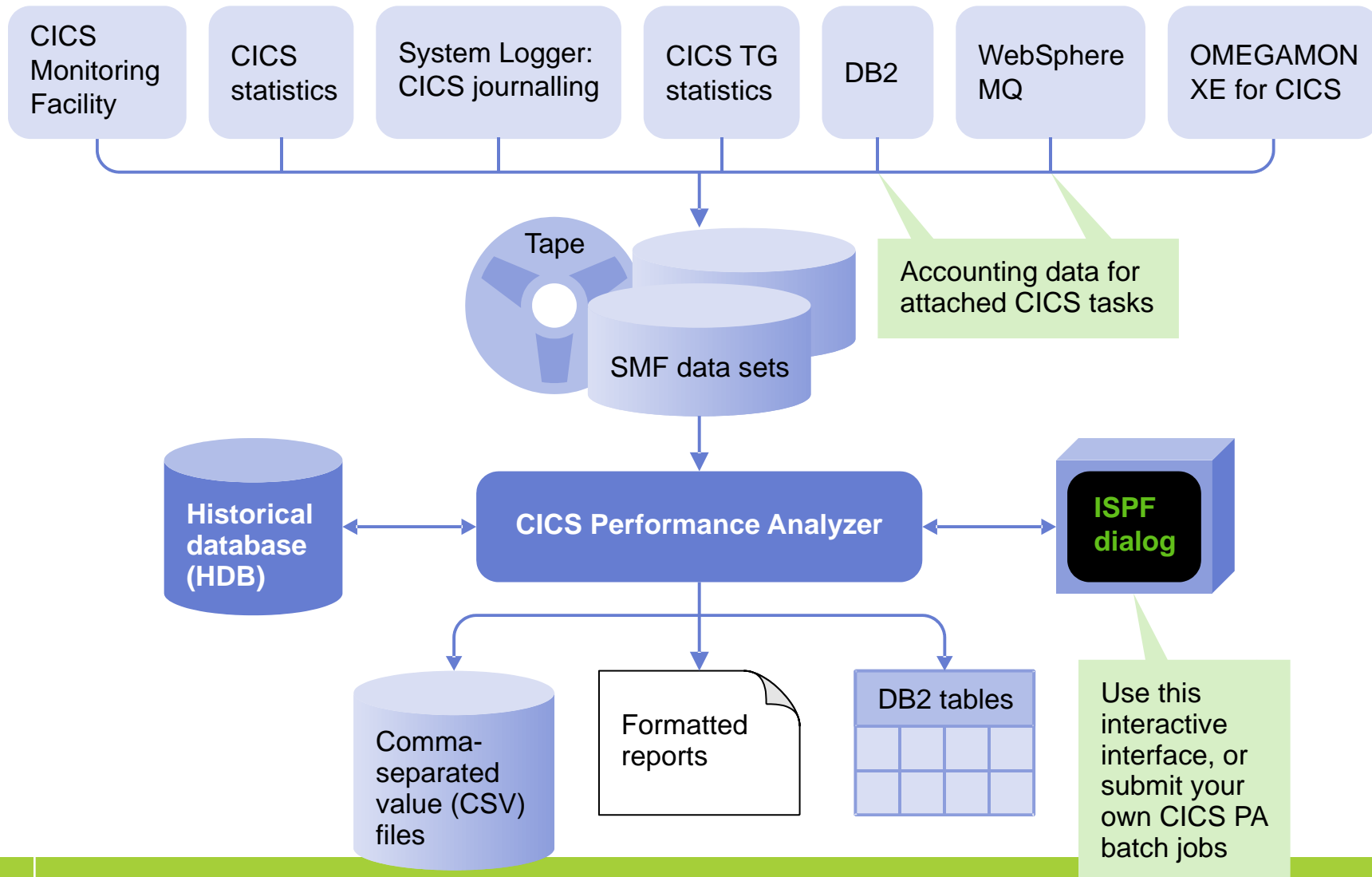
- CICS Tools
 - CICS Interdependency Analyzer (IA)
 - CICS Configuration Manager (CM)
 - CICS Performance Analyzer (PA)
- Rational Developer for System z
- CICS Transaction Gateway
- WebSphere MQ (PoC)
- Tivoli OMEGAMON for CICS (PoC)
- Custom plug-in's

CICS Performance Analyzer

What is CICS Performance Analyzer?

- **Comprehensive Performance Reporting and Analysis for CICS**
 - CICS Monitoring Facility (CMF) data (SMF 110)
 - CICS Statistics data (SMF 110)
 - CICS Server Statistics data (SMF 110)
 - CICS Transaction Gateway Statistics data (SMF 111)
 - DB2 Accounting records (SMF 101)
 - WebSphere MQ Accounting records (SMF 116)
 - OMEGAMON XE for CICS records (SMF 112)
 - z/OS System Logger (SMF 88)
- **Complements ...**
 - IBM Tivoli OMEGAMON XE for CICS on z/OS V4.1.0
 - IBM Tivoli OMEGAMON XE for CICS TG on z/OS V4.1.0

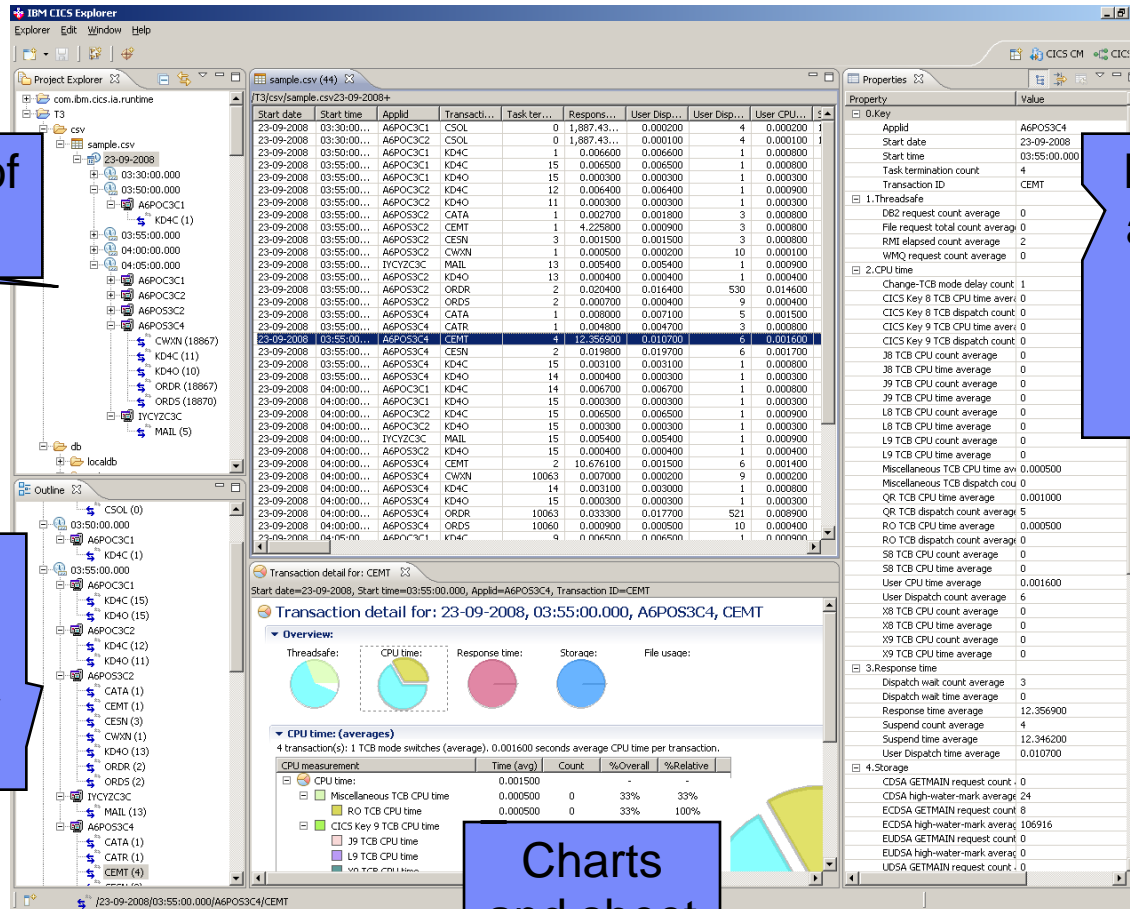
CICS Performance Analyzer Overview



CICS PA Explorer plug-in

- **Provides numerous methods of visualizing historical transaction performance summary data**
- **Access to performance data summaries and reporting scenarios using CICS PA created ...**
 - CSV files from SMF 110 performance data
 - CSV files or database (DB2) from HDB performance data
- **Integrates with the strategic CICS Explorer and other tooling plug-ins**
- **Evolutionary and responsive solution**

The CICS PA plug-in environment



Tree view of data

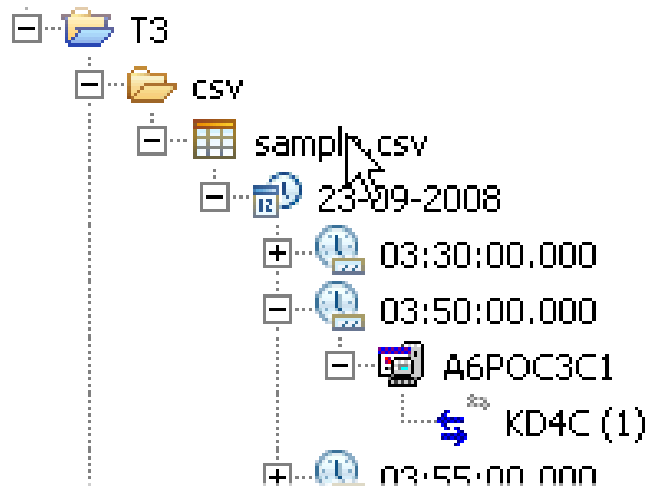
Properties of an individual transaction summary record

Outline (Taxonomy) view of data *csv only

Charts and sheet views

Using CSV files

- Drag and drop csv files in
- Import csv files
- Expand file into a summary tree structure broken down by date, time, Applid and Transaction Id



Using Database connectivity

Data sources

Connection: Name: winmvs2e Preferred

Datasource Location: Server Address: winmvs2e.hursley.ibm.com (DOMAIN) TCP/IP Port Number: 49001 Database Name: DSN9102E (Location)

Query qualifier: Schema: CPAH08

Authentication: User ID: STONECC Password: [REDACTED] Save password: Saved passwords are stored on your computer in a file that is difficult, but not impossible, for an intruder to read.

Advanced

Container: /X-Files/Test23/Cols Machines/special Browse...

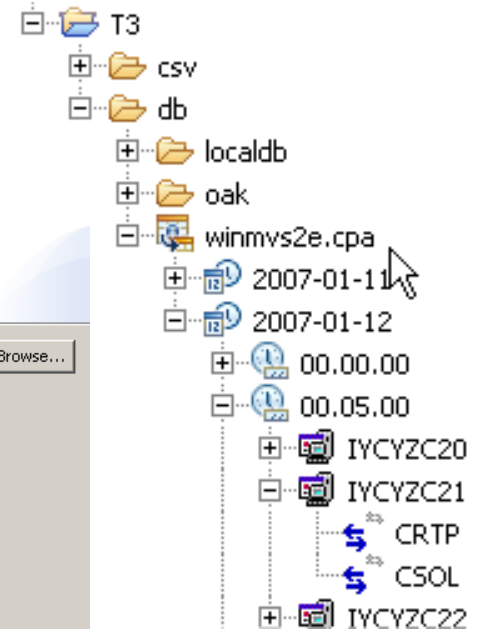
Data source: winmvs2e

File name: winmvs2e.cpa

Table name: EXPLORER_SUMMARY

CICS Data source definition file
This wizard creates a new file with *.cpa extension.

< Back Next > Finish Cancel



Define the data source ...

Visualizing the summary performance data

The screenshot displays the IBM CICS Explorer interface with several key components:

- Transaction Performance Table:** A table showing transaction details such as Start date, Start time, Applid, Transact..., Task ter..., Respons..., User Disp..., User CPU..., and Suspend... for various transactions like BOLS, ERWZ, JZ53, JZ62, HERN, MRF1, ER02, STROPY, BRFE, HRFM, OVSW, OVDA, PMRQ, DTQ, BRUH, MNMQ, ER57, SL95, MNS0, OV72, HSS0, ZFA3, ZFA4, ZFA5, W321, ERN1, QDAZ, RREZ, BRH1, ZV2F, ERGR, STROPY, and ERD0.
- Bar Chart:** A bar chart titled "CICS Key 8 TCB CPU time average=0.169700" showing time demands for various TCBS. The Y-axis is "Time demands" ranging from 0 to 0.2. The X-axis lists TCBS like HRFM (3), OVSW (2), OVDA (2), OV72 (1), ER02 (2), HFDN (2), MNMQ (8), HERN (2), RREZ (1), YERN (1), SACT (1), BRFE (1), HOOD (1), ERD0 (1), ER02 (3), BHR (1), BRFL (1), HSS (1), and OV72 (1).
- Transaction Detail:** A detailed view for transaction "2007-01-11, 23.50.00, IYCYZ24, CRTP". It includes an overview with gauges for Threadsafe, CPU time, Response time, Storage, and File usage. Below is a "Response time" breakdown table.

Response measurement				
Response time:	Time (avg)	Count	%Overall	%Relative
Response time:	0.002937	-	-	-
User Dispatch time	0.001620	2	55%	55%
User CPU time	0.000612	2	21%	38%
CICS Key 8 TCB CPU time	0	0	-	-
38 TCB CPU time	0	0	-	-
L8 TCB CPU time	0	0	-	-
58 TCB CPU time	0	0	-	-
T8 TCB CPU time	0	0	-	-
X8 TCB CPU time	0	0	-	-
CICS Key 9 TCB CPU time	0	0	-	-
39 TCB CPU time	0	0	-	-
L9 TCB CPU time	0	0	-	-
X9 TCB CPU time	0	0	-	-
Miscellaneous TCB CPU ttr	0	0	-	-
RO TCB CPU time	0	0	-	-
QR TCB CPU time	0.000612	2	21%	100%
Suspend time	0.001317	2	45%	45%
Disp&Cl wait time	0.000238	1	8%	15%

Sheet view of summary performance data






- Presents all of the selected data in tabular form
- Allows sorting, sub-selections, reordering of columns

Start date	Start time	Applid	Transacti...	Task ter...	Response time average	User Disp...	User Disp...
2007-01-12	00.05.00	IYCYZC21	CSOL	0	1,887.437559	2	0.000144
2007-01-12	00.05.00	IYCYZC23	CSOL	0	1,887.437082	2	0.000112
2007-01-12	00.05.00	IYCYZC22	CSOL	0	1,887.437043	2	0.000112
2007-01-12	00.05.00	IYCYZC20	CSOL	0	1,887.436902	2	0.000112
2007-01-12	00.05.00	IYCYZC23	CRTP	2	0.004964	2	0.003784
2007-01-12	00.05.00	IYCYZC22	CRTP	2	0.003180	2	0.001616
2007-01-12	00.05.00	IYCYZC24	CRTP	2	0.003152	2	0.002118
2007-01-12	00.05.00	IYCYZC20	CRTP	3	0.002981	2	0.001941
2007-01-12	00.05.00	IYCYZC21	CRTP	3	0.002973	2	0.001579
2007-01-12	00.05.00	IYCYZC23	CCVC	2	0.002528	2	0.001816
2007-01-12	00.05.00	IYCYZC23	CCVW	2	0.002310	1	0.001744
2007-01-12	00.05.00	IYCYZC22	CMAK	1	0.001016	1	0.000992








This example shows a sub-selection made for a particular date sorted by Response time average

Report categorisation







Response time breakdown

- [-]  Response time:
 - [-]  User Dispatch time
 - [-]  User CPU time
 - [-]  Suspend time
 - [-]  Dispatch wait time








Storage breakdown

- [-]  Storage:
 - [-]  Below 16 Megabytes
 -  CDSA high-water-mark
 -  UDSA high-water-mark
 - [-]  Above 16 Megabytes
 -  ECDSA high-water-mark
 -  EUDSA high-water-mark















Threadsafe breakdown

- [-]  Threadsafe:
 - [-]  User CPU time
 -  CICS Key 8 TCB CPU time
 -  CICS Key 9 TCB CPU time
 -  Miscellaneous TCB CPU time
 -  QR TCB CPU time

File usage breakdown

- [-]  File usage:
 - [-]  File request total count
 -  File add count
 -  File browse count
 -  File delete count
 -  File get count
 -  File put count

CPU time breakdown

- [-]  CPU time:
 - [-]  Miscellaneous TCB CPU time
 -  RO TCB CPU time
 - [-]  CICS Key 9 TCB CPU time
 -  J9 TCB CPU time
 -  L9 TCB CPU time
 -  X9 TCB CPU time
 - [-]  CICS Key 8 TCB CPU time
 -  J8 TCB CPU time
 -  L8 TCB CPU time
 -  S8 TCB CPU time
 -  T8 TCB CPU time
 -  X8 TCB CPU time
 -  QR TCB CPU time

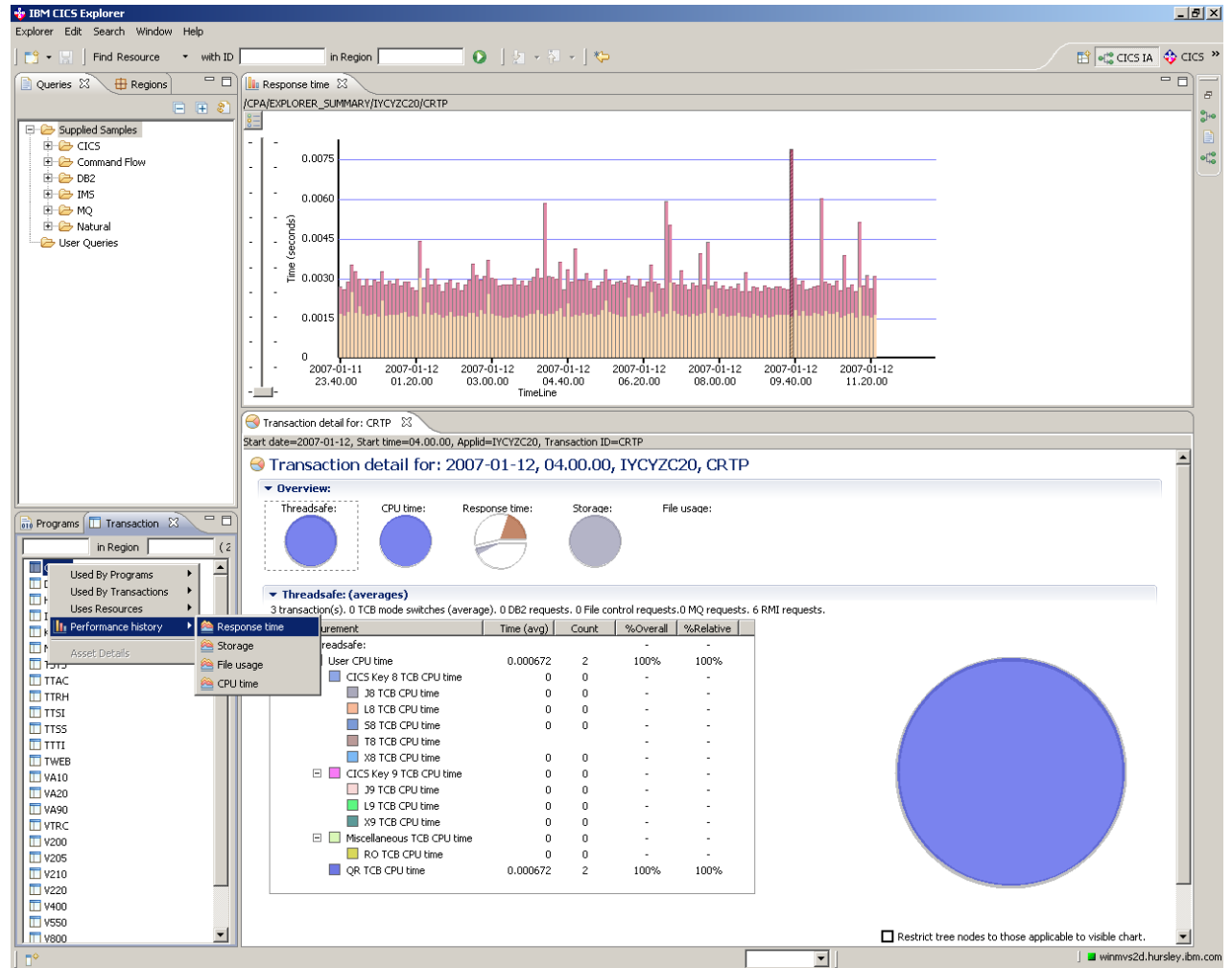
Integration with CICS SM (base explorer)

The screenshot displays the IBM CICS Explorer application window. The main interface is divided into several panes:

- Left Pane:** A tree view showing the CICS hierarchy for server IYCYZC23, including regions like TOOLPLX1 (3/4), CICS131, CICS231 (IYCYZC21), CICS331 (IYCYZC22), CICS531 (IYCYZC23), and TSTPLEX (11/12).
- Center Pane:** A table listing CICS regions. The selected region is CICS231 CRTP, which is enabled and has a Use Count of 250. A context menu is open over this row, showing options like Open, Performance history, and CPU time.
- Right Pane (Top):** A CPU time bar chart for the transaction CRTP, showing time in seconds over a period from 2007-01-11 to 2007-01-12. The y-axis ranges from 0 to 0.0006 seconds.
- Right Pane (Bottom):** Transaction detail for CRTP, showing an overview with four circular gauges for Threadsafe, CPU time, Response time, and Storage. Below the gauges is a table of performance metrics.

Region	Name	Status	Use C
CICS231	CPMI	✓ ENABLED	0
CICS231	CPSS	✓ ENABLED	0
CICS231	CQPI	✓ ENABLED	0
CICS231	CQPO	✓ ENABLED	0
CICS231	CQRY	✓ ENABLED	0
CICS231	CREA	✓ ENABLED	0
CICS231	CREC	✓ ENABLED	0
CICS231	CRMD	✓ ENABLED	0
CICS231	CRMF	✓ ENABLED	0
CICS231	CRSQ	✓ ENABLED	1
CICS231	CRSR	✓ ENABLED	0
CICS231	CRSY	✓ ENABLED	0
CICS231	CRTE	✓ ENABLED	0
CICS231	CRTP	✓ ENABLED	250
CICS231	CSKP	✓ ENABLED	0
CICS231	CSMI	✓ ENABLED	0

Integration with CICS IA



CICS Interdependency Analyzer

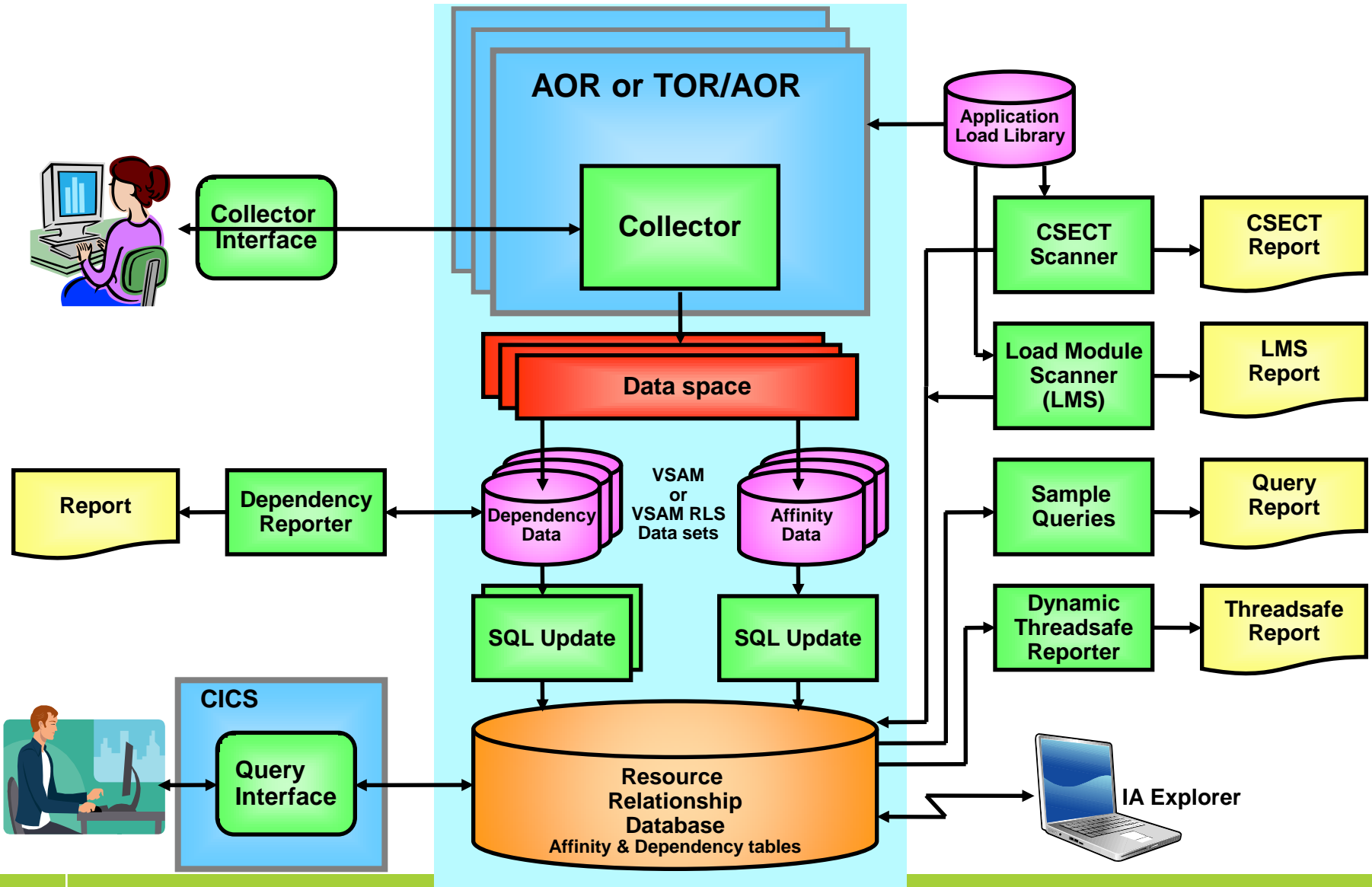
What is CICS Interdependency Analyzer ?

- Run-time tool for use with CICS TS for z/OS
- Identifies the sets of resources used by CICS transactions, and their relationships to other resources
- Consists of,
 - run-time collector
 - query interface
 - batch reporter
 - load module scanner
 - CSECT scanner
 - IA Explorer

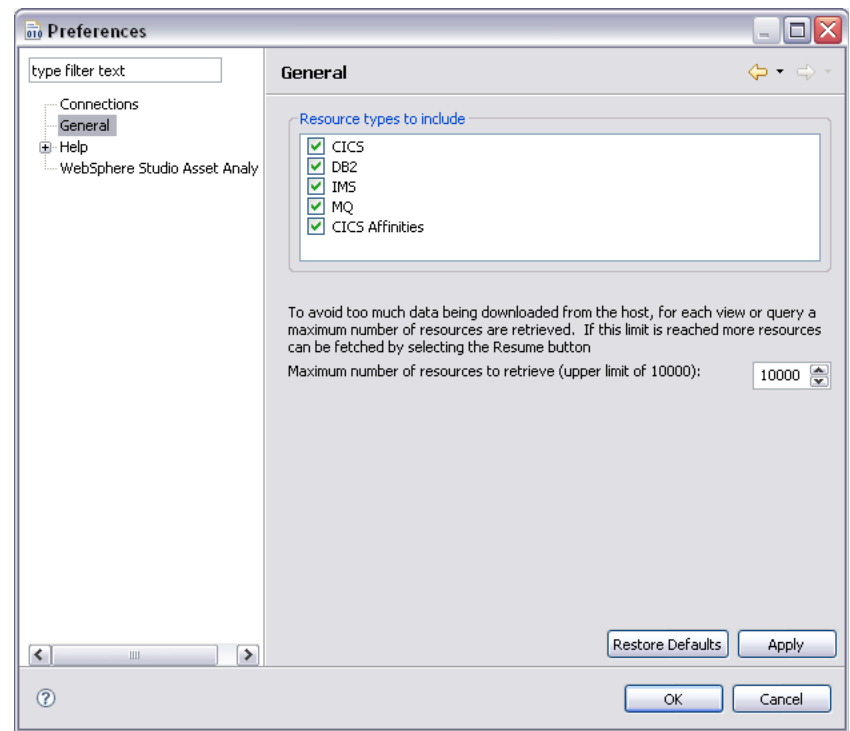
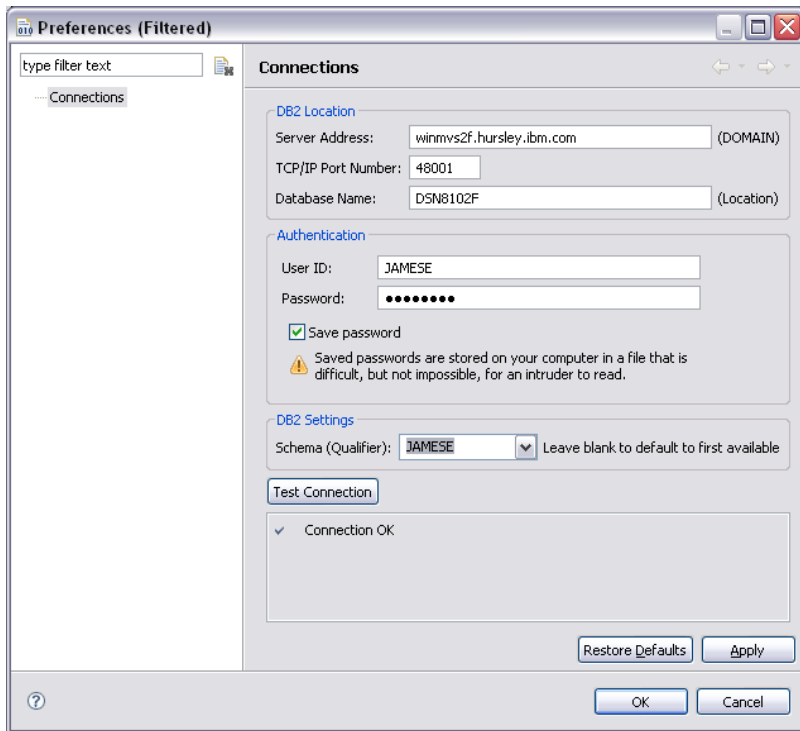
CICS IA Benefits

- Enables you to understand the relationships between resources used by CICS and its applications.
- You can see
 - what resources a CICS region uses
 - what resources a transaction needs in order to run
 - which programs use which resources
 - which resources are no longer used
 - And much more
- The ability to maintain, enhance, modify or redistribute your applications is much improved

CICS IA Architecture

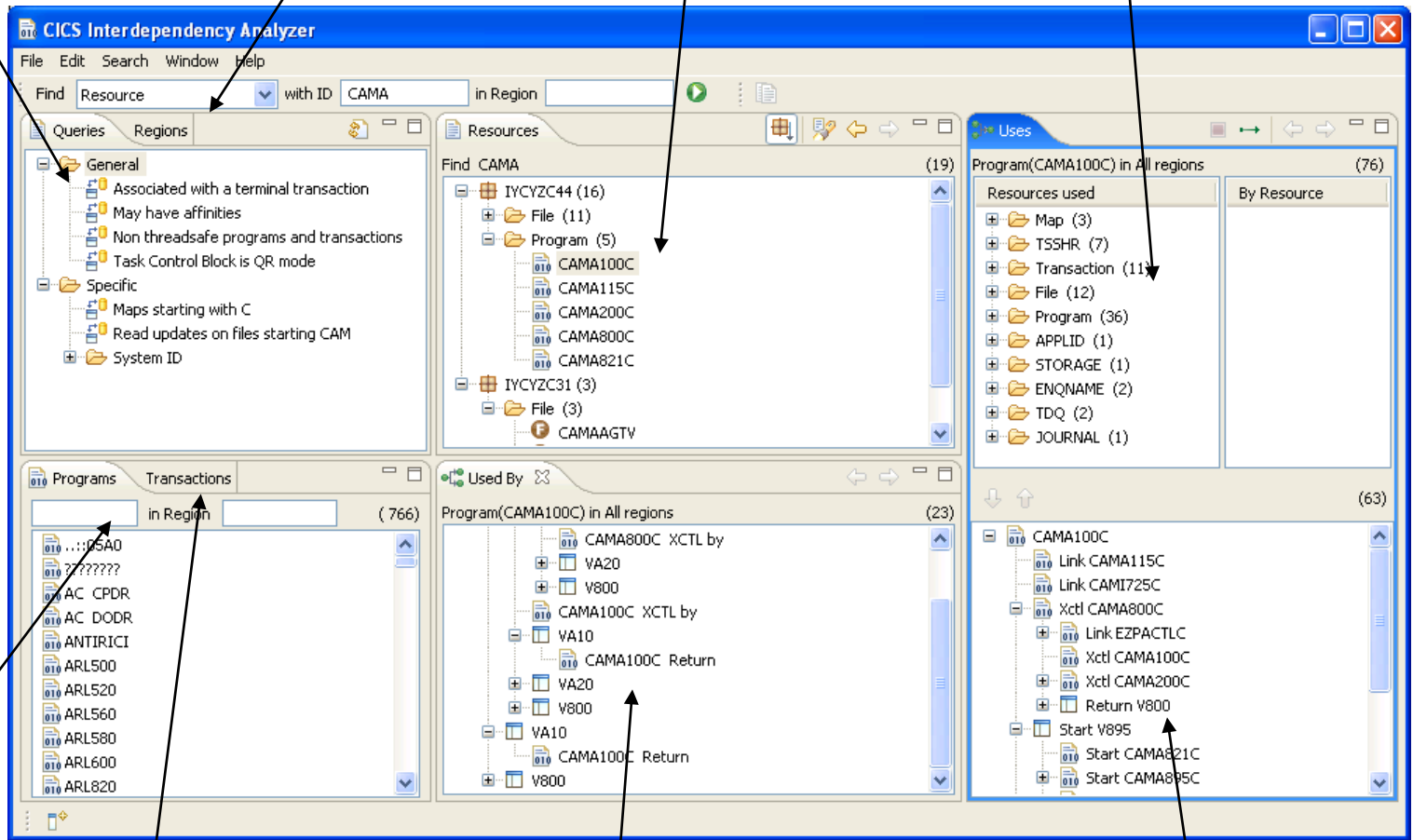


CICS IA Explorer plugin - connection



CICS IA Explorer – main view

Saved query definitions List of all Regions Results of queries Breakdown of resources used



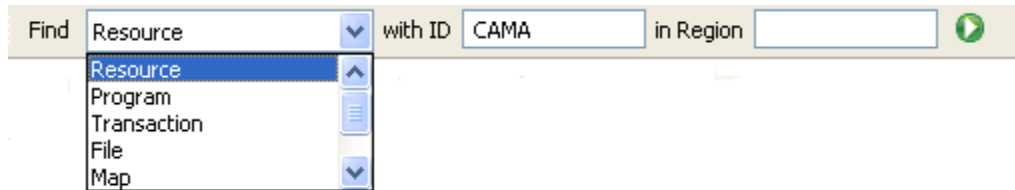
List of all Programs

List of all Transactions

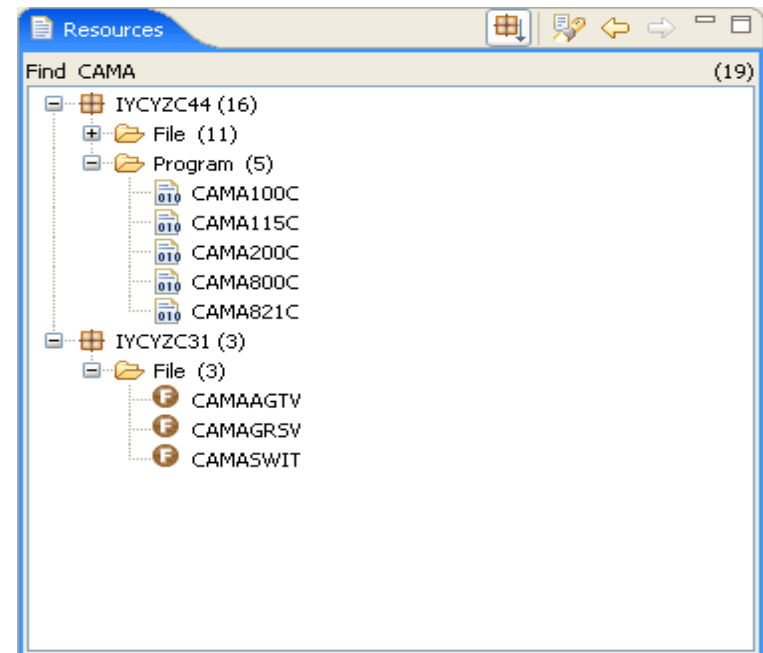
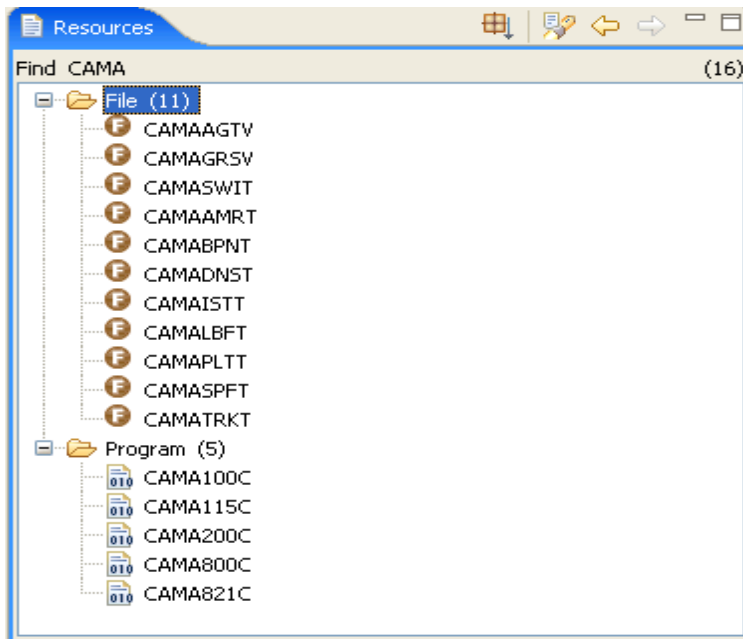
Where is resource used ? Call tree of program execution

CICS IA Explorer plugin- Resource Toolbar

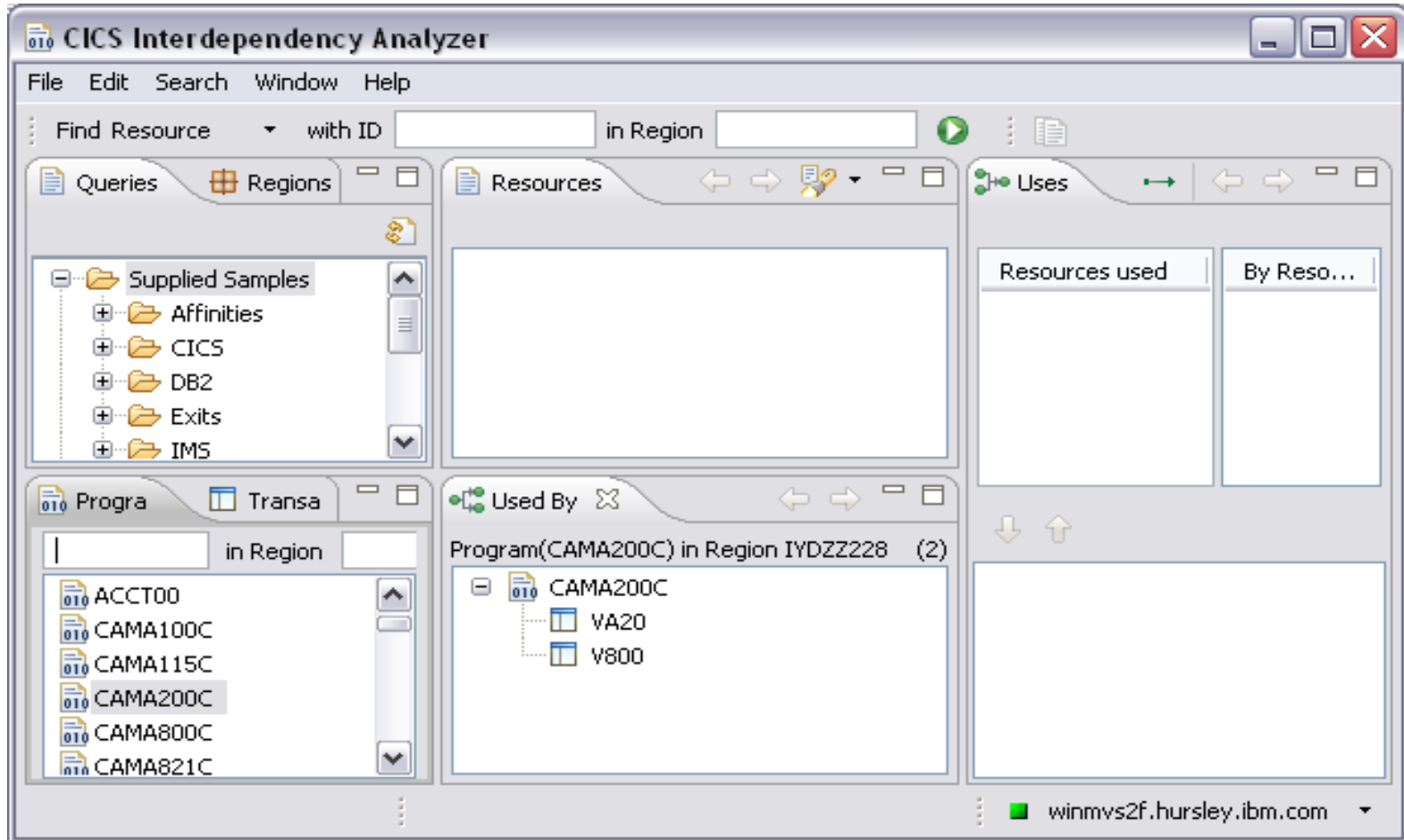
Quickly find resource(s) by type, name and region



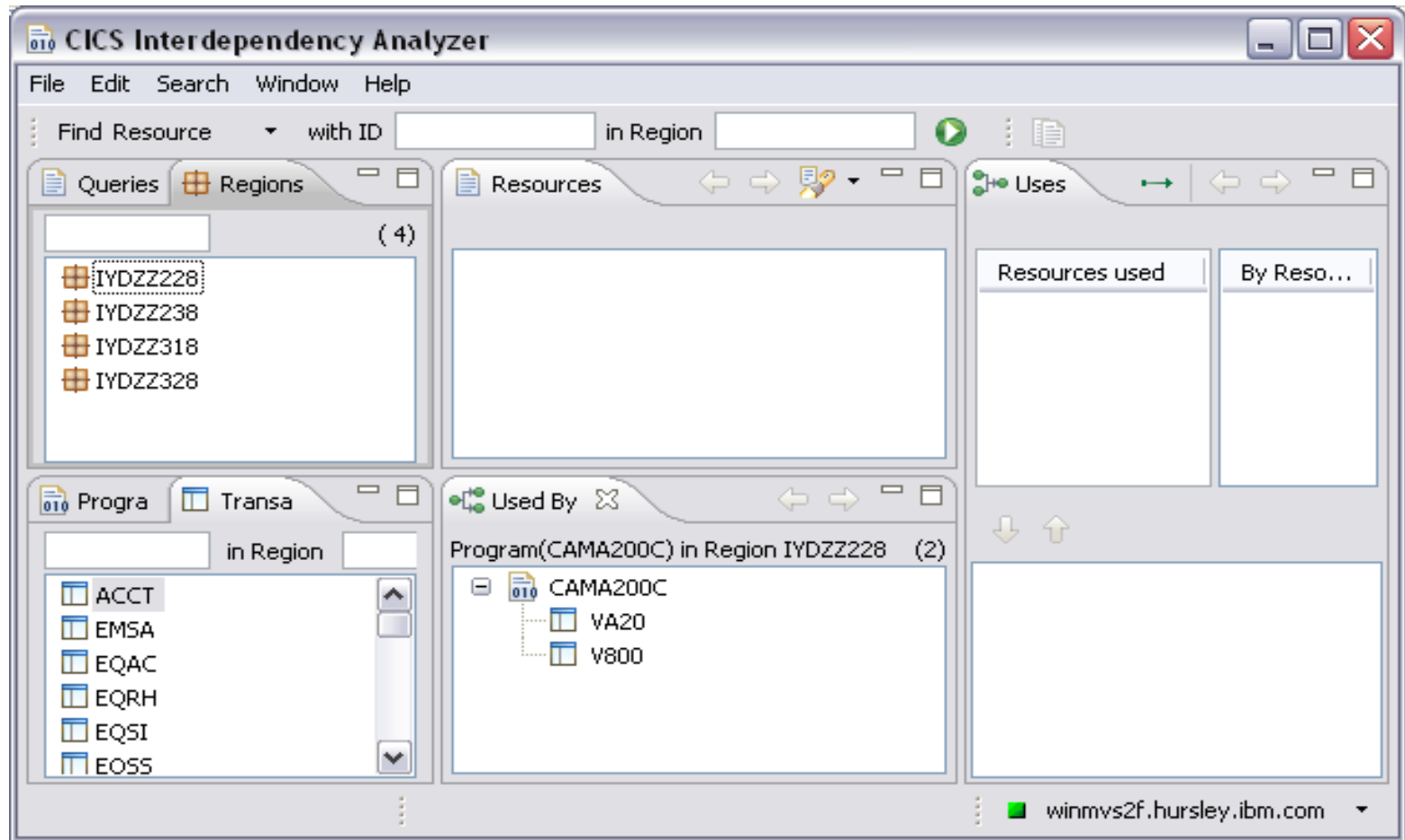
Any set of results can be broken down by Region



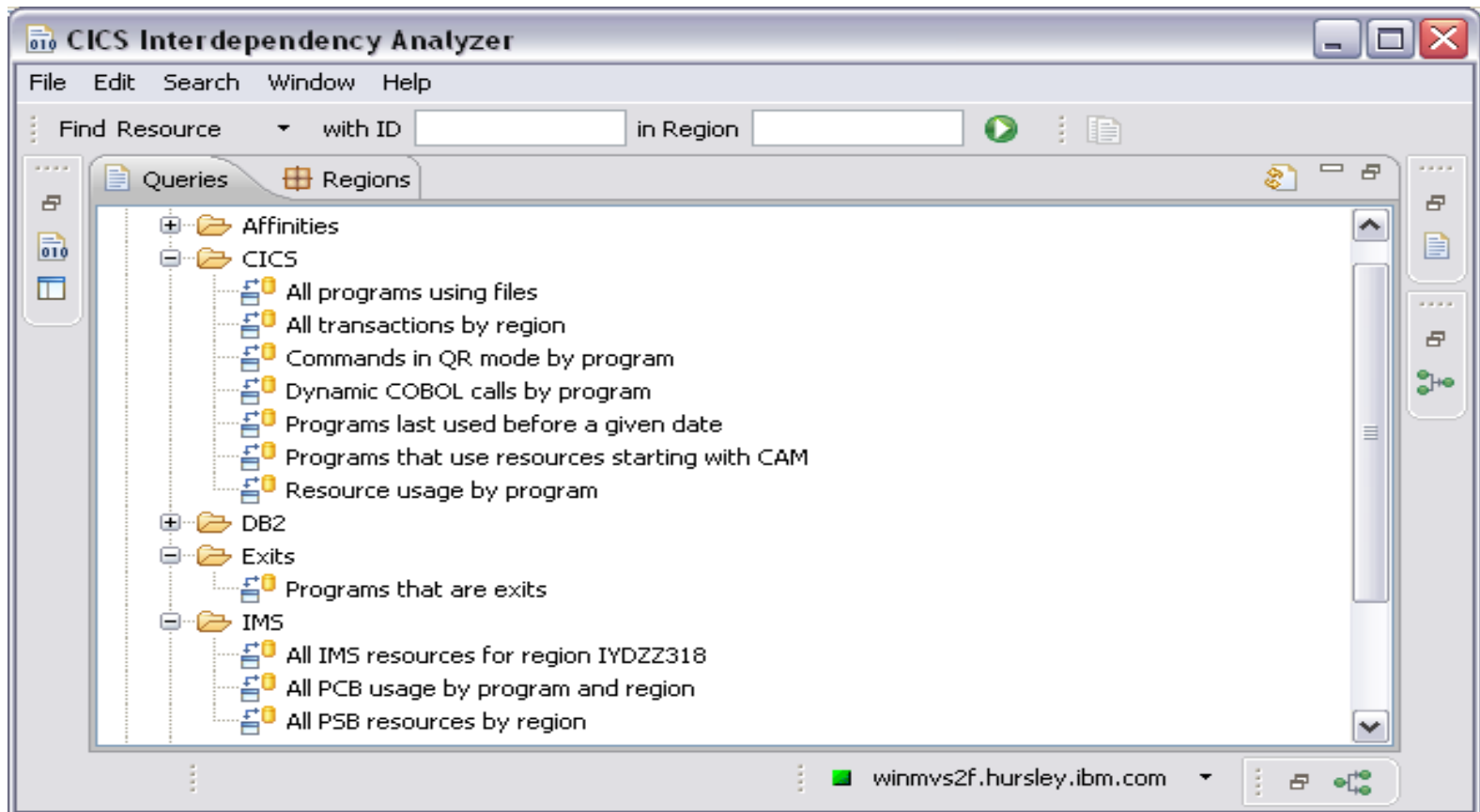
CICS IA Explorer plugin – queries and programs



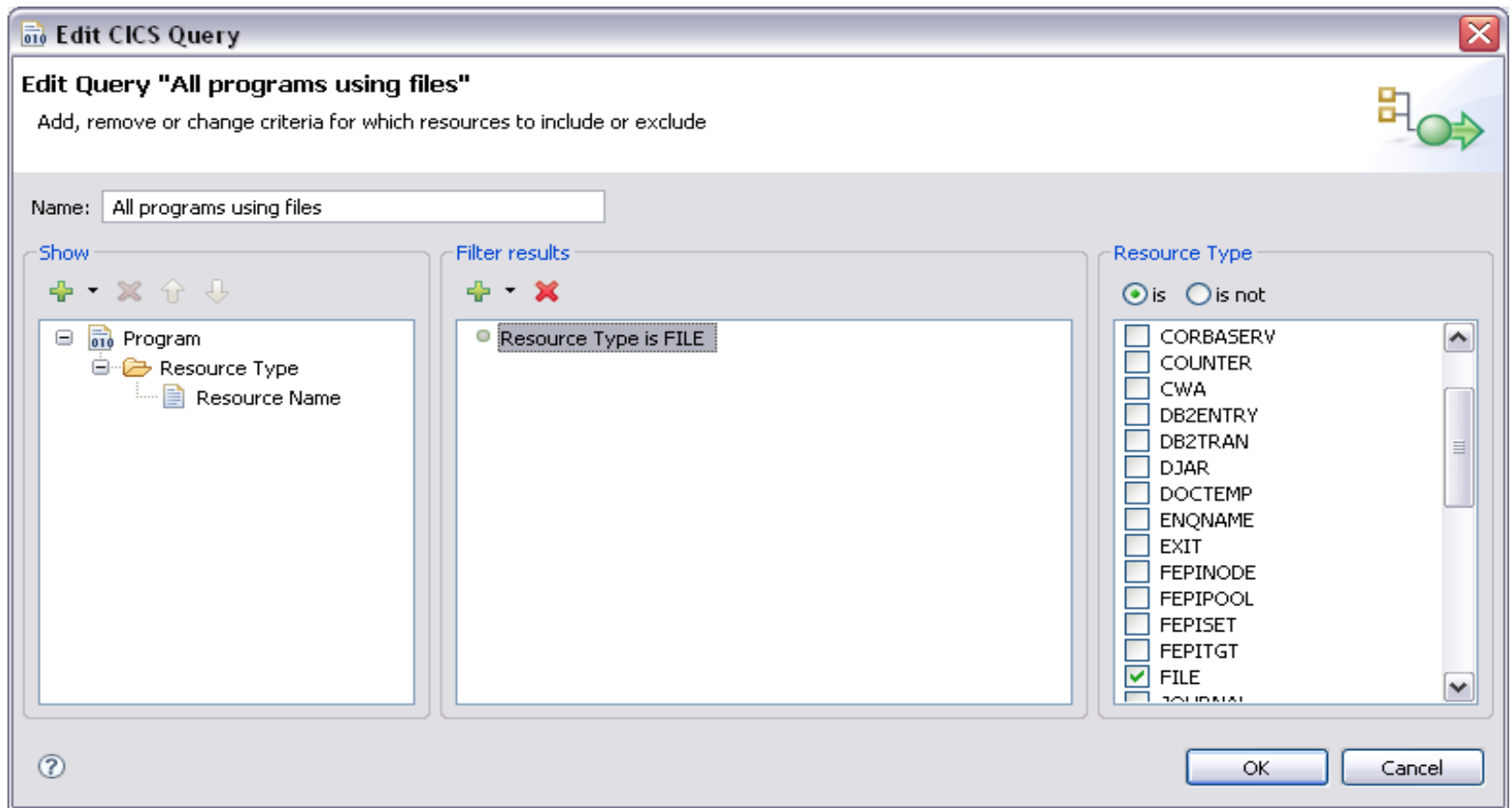
CICS IA Explorer plugin – regions and transactions



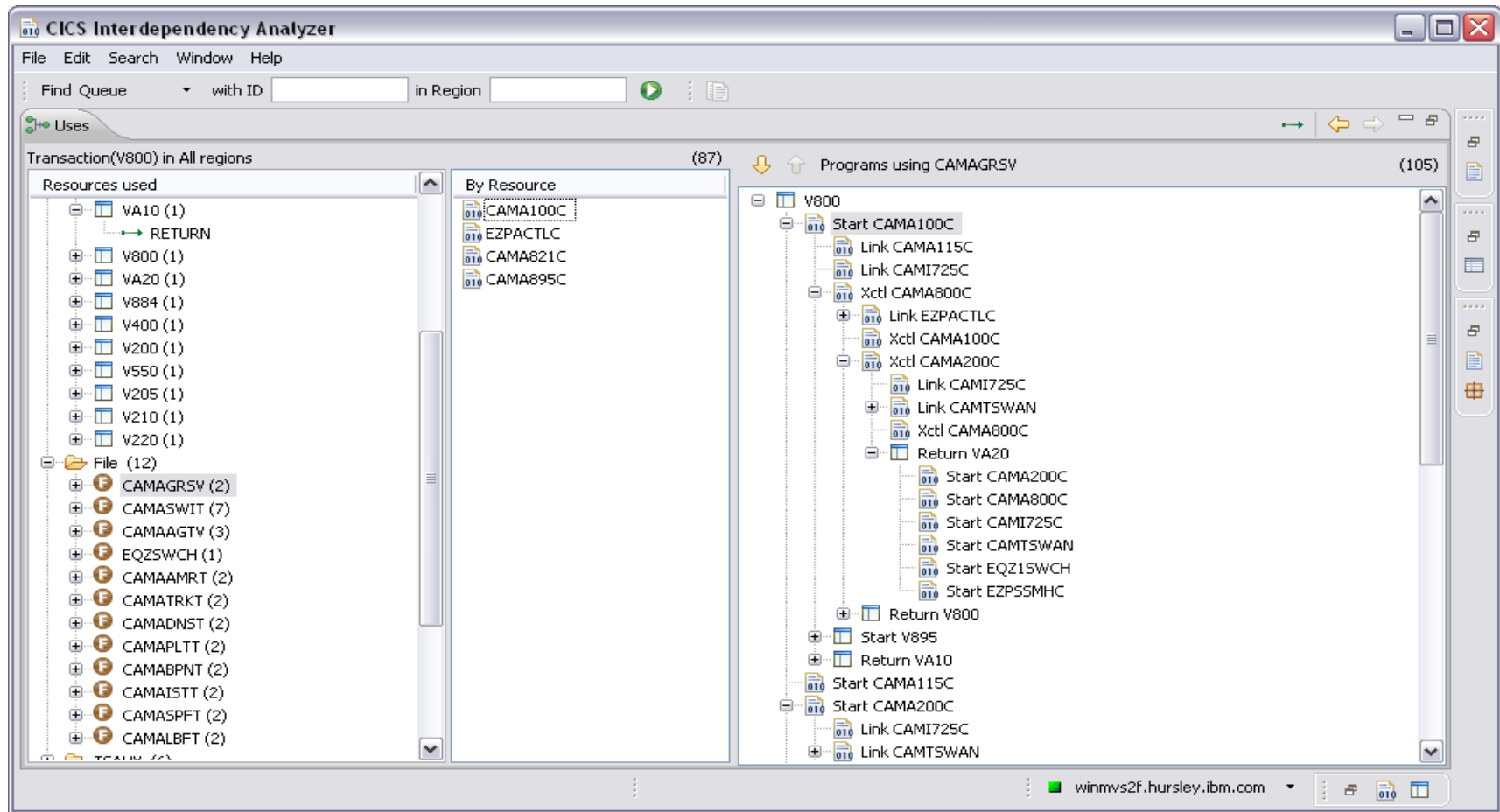
CICS IA Explorer plugin – queries folder



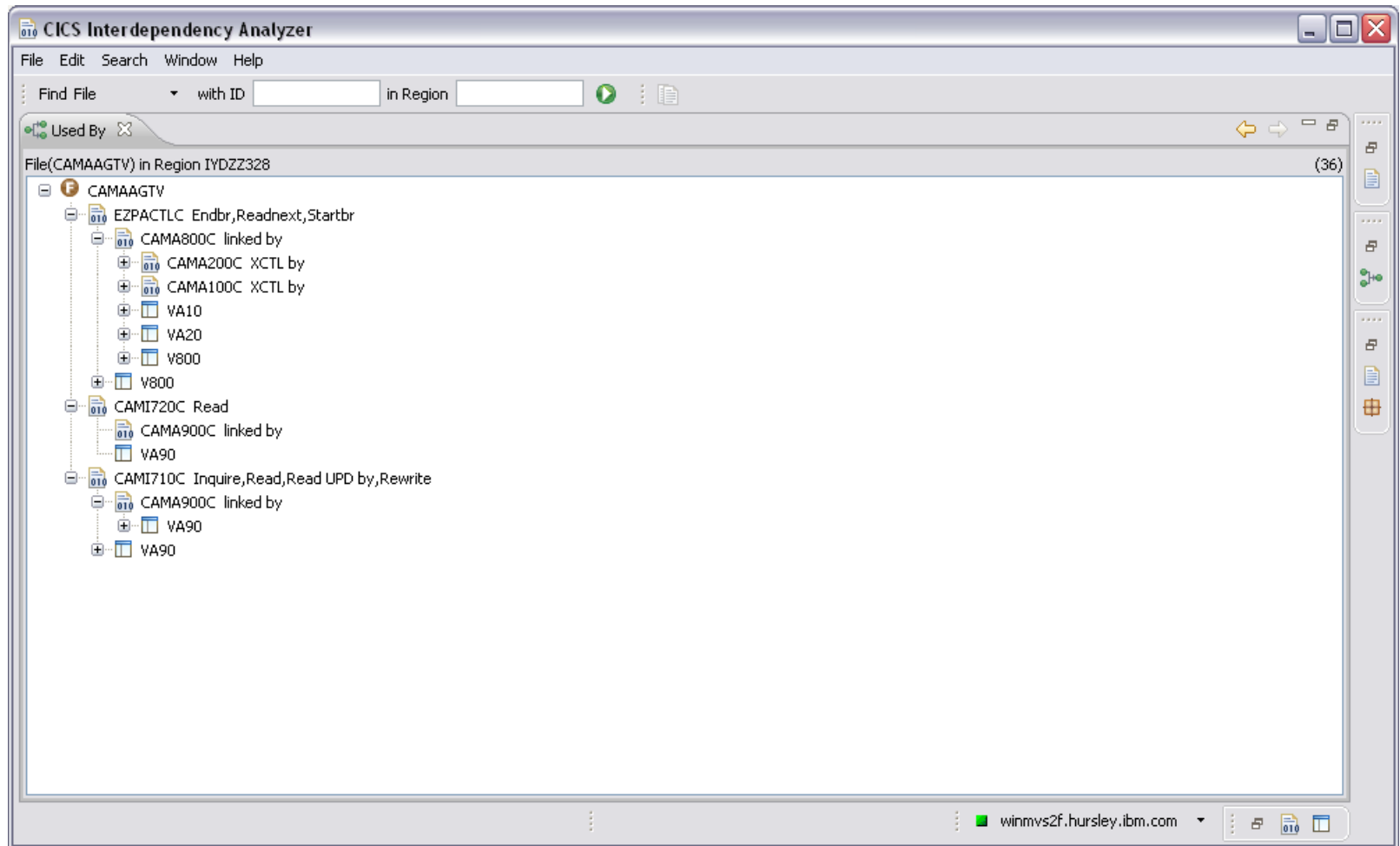
CICS IA Explorer plugin – editing queries



CICS IA Explorer plugin – uses folder

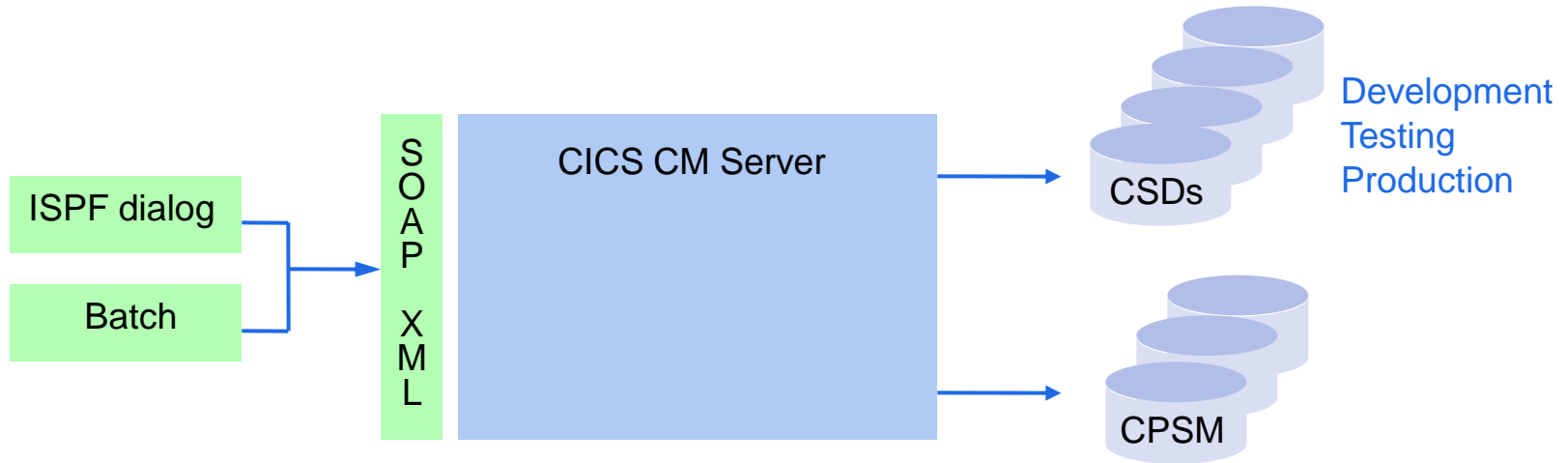


CICS IA Explorer plugin – used by folder



CICS Configuration Manager

CICS Configuration Manager



Goals

- Governance, regulatory compliance, accountability
- Responsiveness, business agility
- Automated repeatable processes

Usage Examples

Function

Switching CSDs

Copying resources

Security/standards

History

Side-by-side compare

Compare Groups

Multiple configurations

Show exceptions

Search

Audit reporting

Migrate with transform

Clean-up reports

Wow

No routing, logging on and off

So easy, and it even does CPSM to CSD

I can finally delegate work and do important stuff

Tells me who, what, when, how

See resource differences on the screen

TEST is different to PROD, not what I expected

Great, I can see n-ways at the same time

Reduce clutter so I can easily see the problem

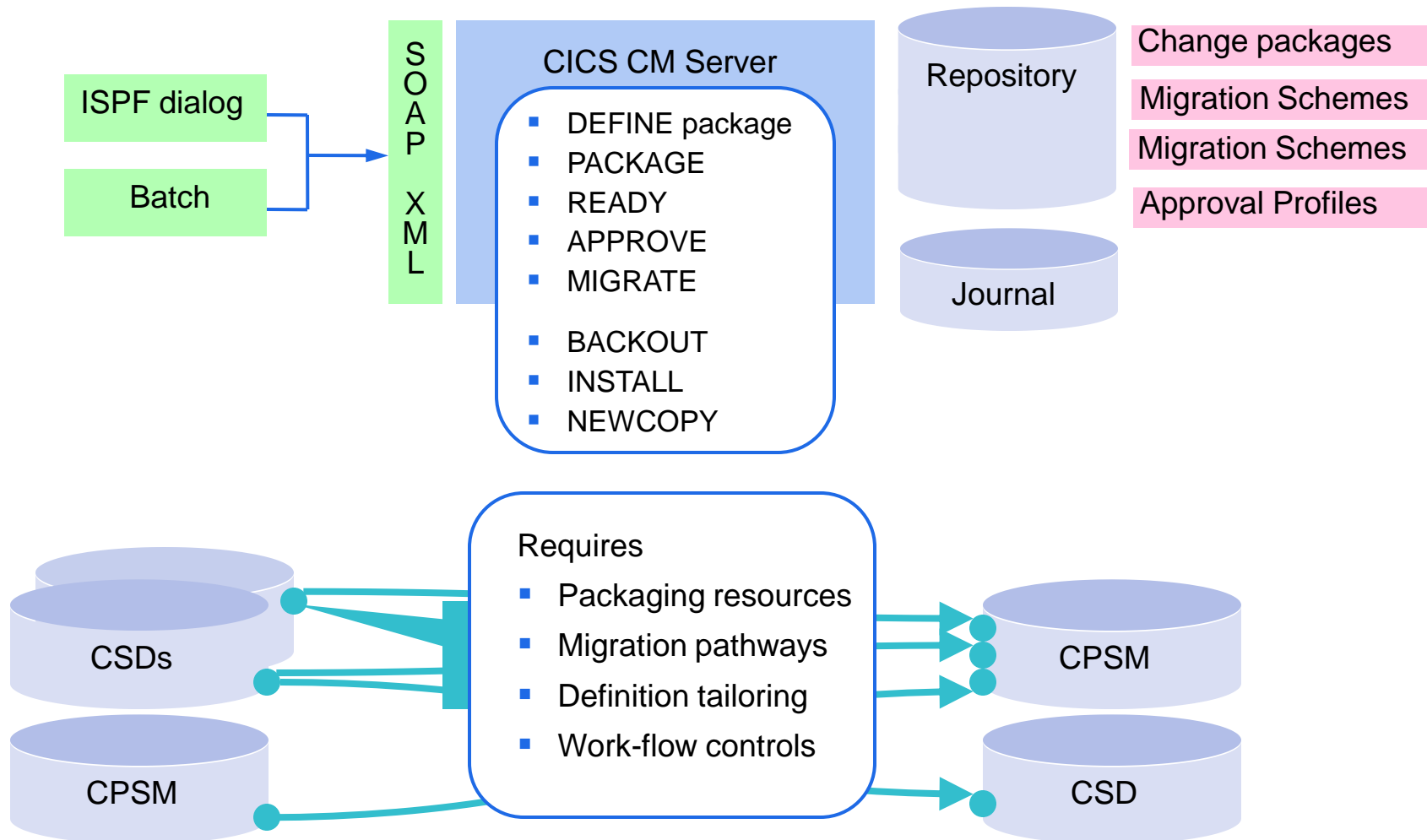
Just like Google - I can keep digging

That'll keep the Auditors happy

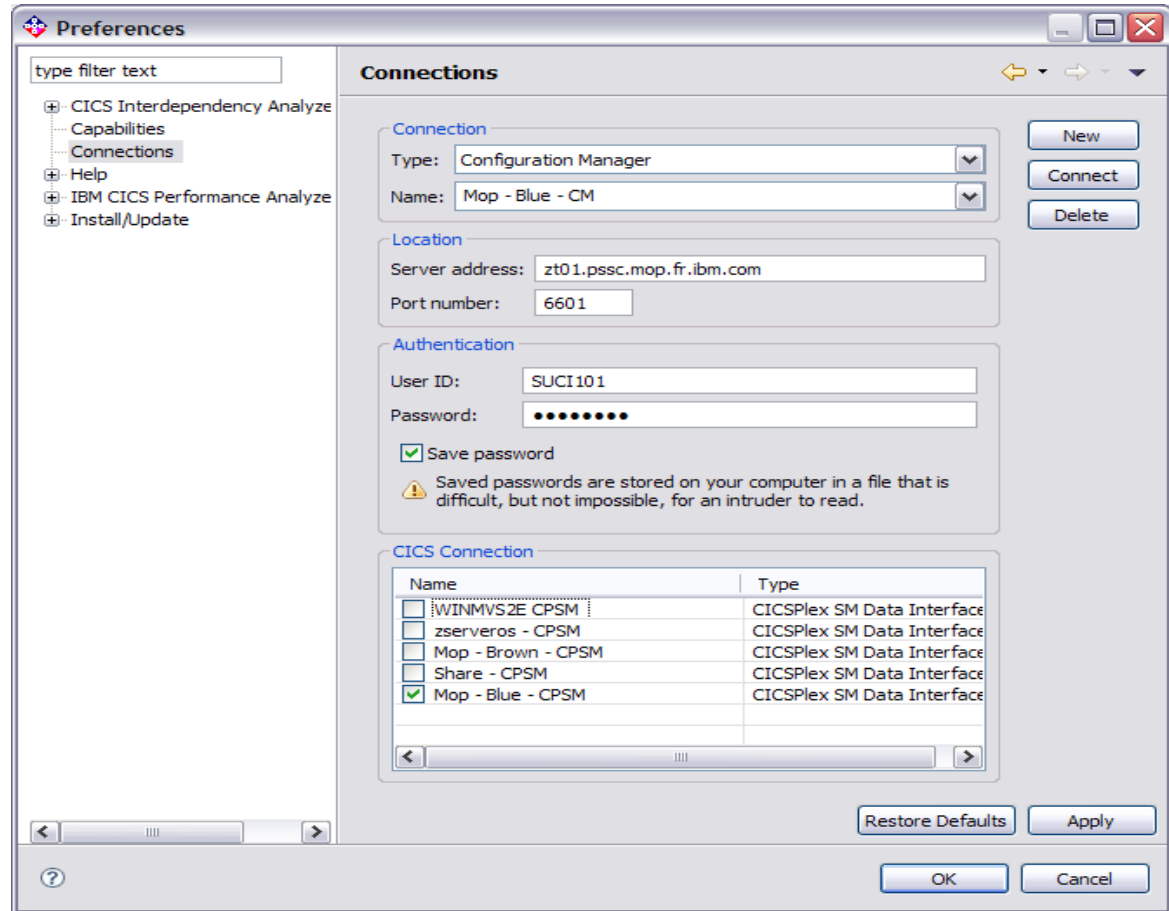
This will save heaps of time

My CSD files are in a mess

Promoting Definition Changes



CICS CM Explorer plugin - connection



CICS CM Explorer plugin – smart editor and history view

The screenshot displays the IBM CICS Explorer application window. The main interface is divided into several panes:

- Configurations:** A table listing configurations with columns for Name and CSD/Context.

Name	CSD/Context
CICSPLX1	CICSPLX1
DM01CSD1	CICSUSR.V3R2.CICSDM01.PA...
DM01CSD2	CICSUSR.V3R2.CICSDM01.PA...
- Lists:** A list of items in the selected configuration (DM01CSD1), including CMLABL1, DFH\$IVPL, DFH\$LIST, LISTDEMO, and LISTXT1.
- Groups:** A list of groups in the selected configuration (DM01CSD1), including AUTOTYPE, CANDLE, CEE, CICS0ADT, COMPGRP1, COMPGRP2, COMPGRP3, CSQCAT1, DB2V8, DB2610, DEMOGRP, DFH\$ACCT, DFH\$AFLA, DFH\$BABR, and DFH\$BARF.
- Transaction Definition (D8CS):** A table showing transaction details.

Name	Version	Program ...	Created	Change
D8CS	N/A	DSN8CC0	N/A	07-May-
D8PP	N/A	DSN8CP6	N/A	03-Apr-2
D8PS	N/A	DSN8CP0	N/A	03-Apr-2
D8PT	N/A	DSN8CP3	N/A	03-Apr-2
D8PU	N/A	DSN8CP3	N/A	03-Apr-2
- Transaction Definition (D8CS) Overview:** A detailed view of the D8CS transaction definition.
 - Basic:** Name: D8CS, Description: [], Version: [], Created: [], Enabled, Changed: 07-May-2009 10:20:51.
 - Details:** Initial Program: DSN8CC0, Profile: DFHCICST, Task Work Area Size: 48.
 - Storage:** Clear task-lifetime storage on release to protect sensitive data, Task life-time storage can be located above 16MB line, Isolate user-key task-lifetime storage from other tasks' user-key programs, Obtain task storage in CICS-key.
 - User Data:** 1: [], 2: [], 3: [].
- History:** A table showing the revision history for D8CS.

Revision Time	User Name/After	Before
2009/05/07 10:10:28	SUCI101(UPDATE)	
twsize	0	54
2009/05/07 10:09:35	SUCI101(UPDATE)	
twsize	54	0

CICS CM Explorer plugin – search and history

The screenshot displays the IBM CICS Explorer application window. The interface is divided into several panes:

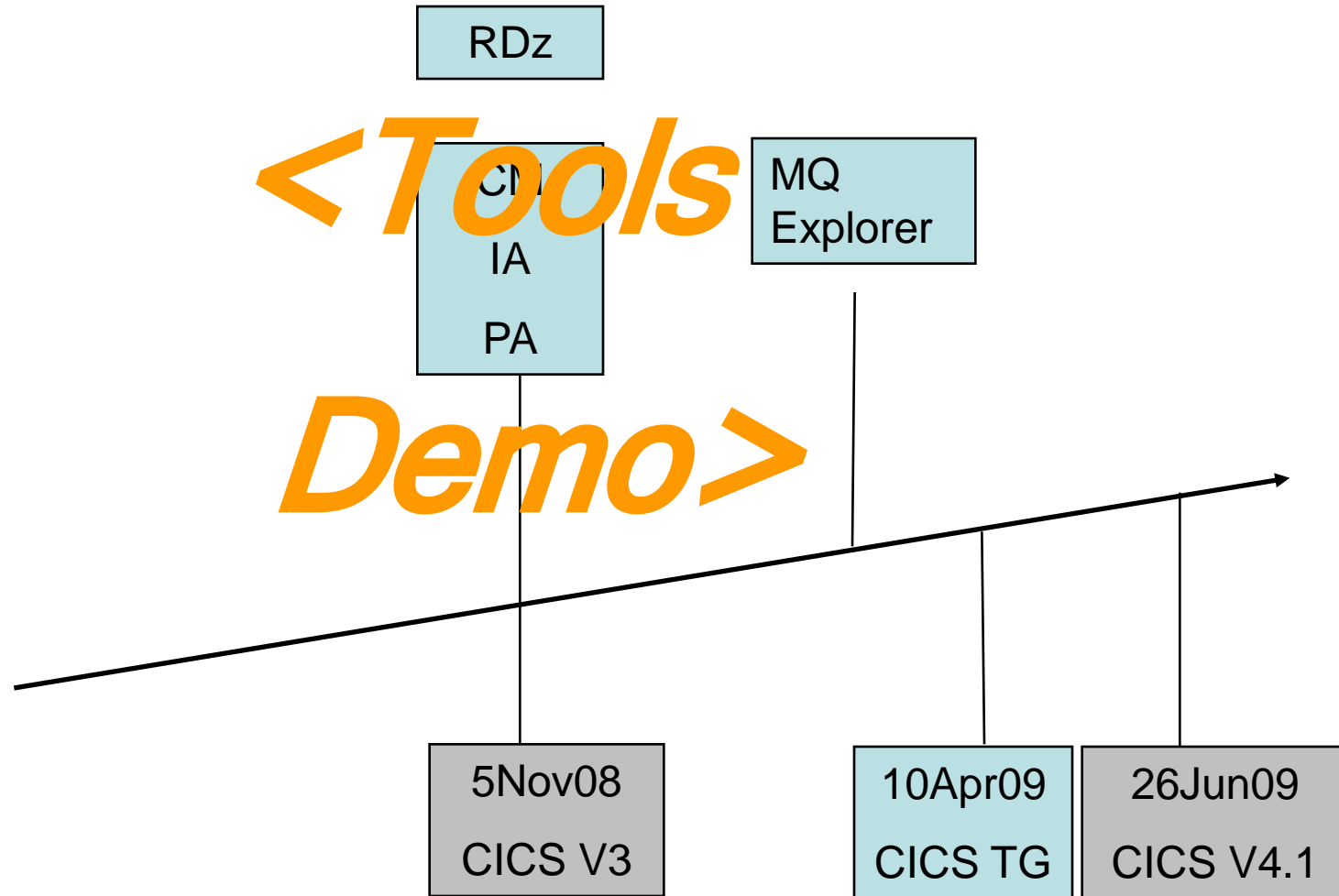
- Configurations:** A table listing configurations with columns for Name and CSD/Context.

Name	CSD/Context
CICSPLX1	CICSPLX1
DM01CSD1	CICSUSR.V3R2.CICSDM01.PA...
DM01CSD2	CICSUSR.V3R2.CICSDM01.PA...
- Lists:** A list of items in the DM01CSD2 context, including CMLABL1, DFH\$IVPL, DFHLIST, and LISTXPT2.
- Groups:** A tree view of groups in the DM01CSD2 context, listing various system groups like CANDLER, CICS0ADT, COMPGRP1, etc.
- Transaction Definitions:** A table showing transaction details for CNX0211I.

Name	Version	Program Name	Created	Changed	Description	Status
D8CS	N/A	DSN8CC0	N/A	07-May-2009 1...		✓ ENABLED
D8PP	N/A	DSN8CP6	N/A	03-Apr-2009 0...		✓ ENABLED
D8PS	N/A	DSN8CP0	N/A	03-Apr-2009 0...		✓ ENABLED
D8PT	N/A	DSN8CP3	N/A	07-May-2009 1...		✓ ENABLED
D8PU	N/A	DSN8CP3	N/A	03-Apr-2009 0...		✓ ENABLED
- Search Results:** Shows orphaned groups for DM01CSD1 and DM01CSD2, listing a large number of DFH\$ prefixed groups.
- Properties/History:** A table showing the resource history for D8CS.

Revision	Time	User Name/After	Before
+	2009/05/07 10:38:33	SUCI101(UPDATE)	
+	2009/05/07 10:35:28	SUCI101(UPDATE)	
+	2009/05/07 10:34:51	SUCI101(UPDATE)	
+	2009/05/07 10:20:55	SUCI101(UPDATE)	
+	2009/05/07 10:10:28	SUCI101(UPDATE)	
+	2009/05/07 10:09:35	SUCI101(UPDATE)	

CICS CM Explorer Integration – Demo

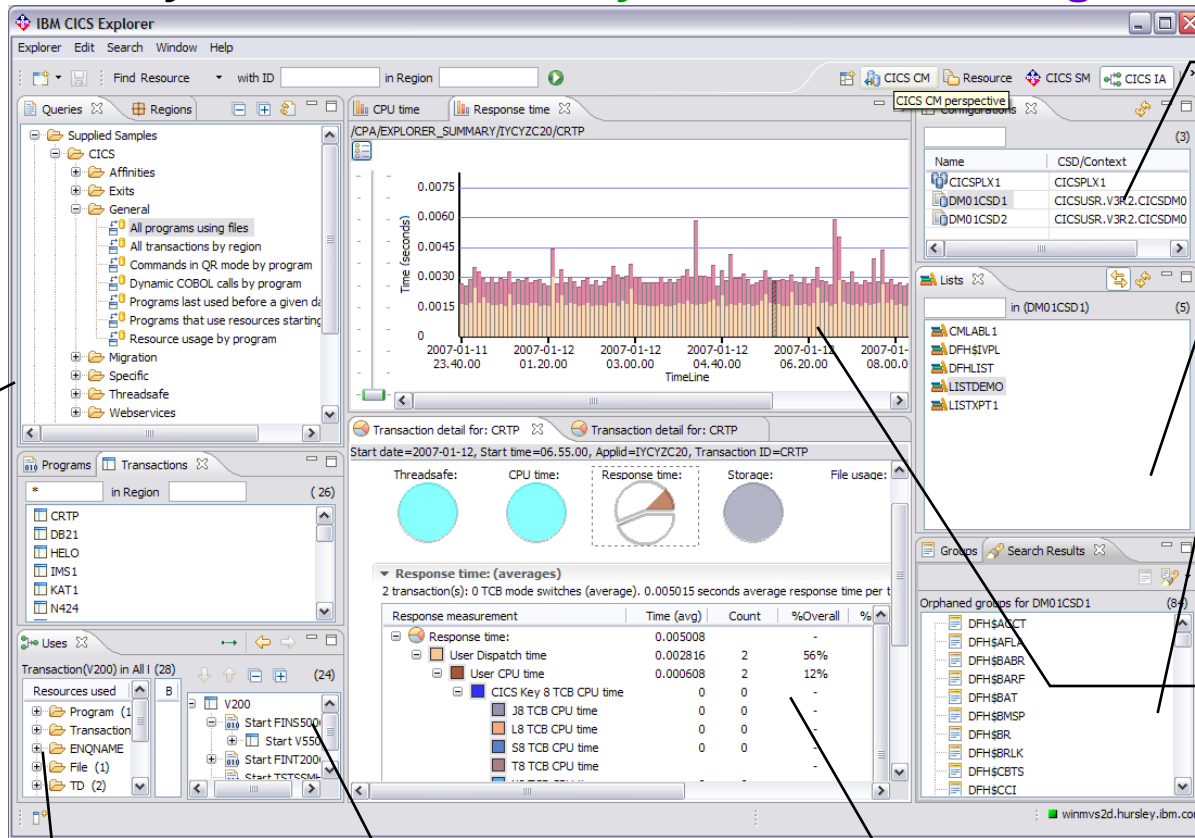


CICS Explorer & CICS Tools: Putting it all Together

**Interdependency
Analyzer**

**Performance
Analyzer**

**Configuration
Manager**



Single point of control for CSDs and DREPs

Lists and ResDescs

Search for Orphaned groups

Timeline of response times

Shipped Sample Queries

View tree of resources used

Resources used by a transaction

Drilldown into transaction

Rational Developer for System z

The screenshot displays the IBM Rational Developer for System z interface. The main window is the Resource Definition Editor, showing a 'Resource Definition' for region NQA17C01. A table lists resources with their names, types, descriptions, and states. Below this, there are sections for 'Installation' and 'Export Definition'. At the bottom, a 'Programs' tab is active, showing a list of programs and their status.

CICS TS Explorer Region tree

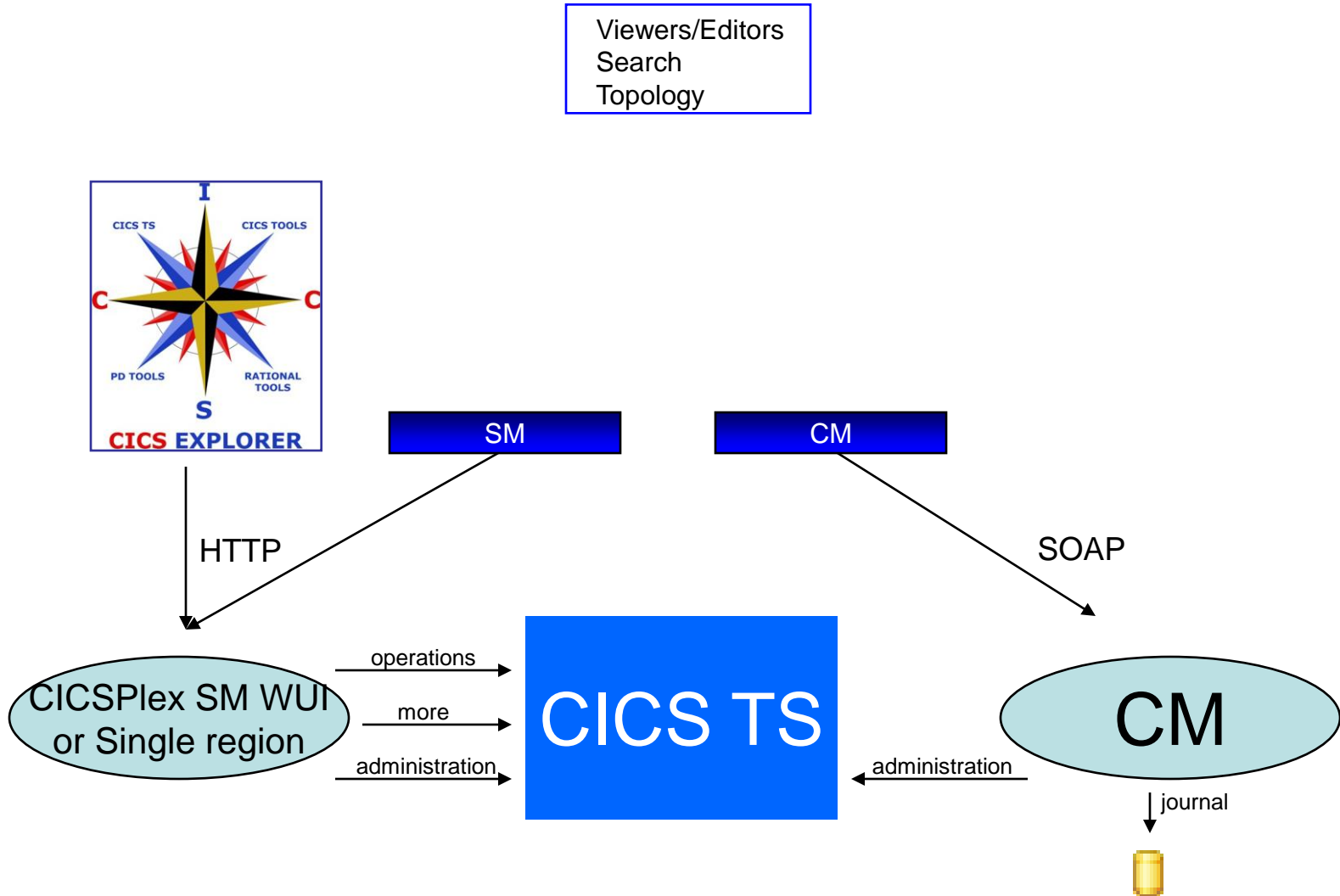
CICS TS Explorer Resource types

- programs
- transactions
- files
- RPL list

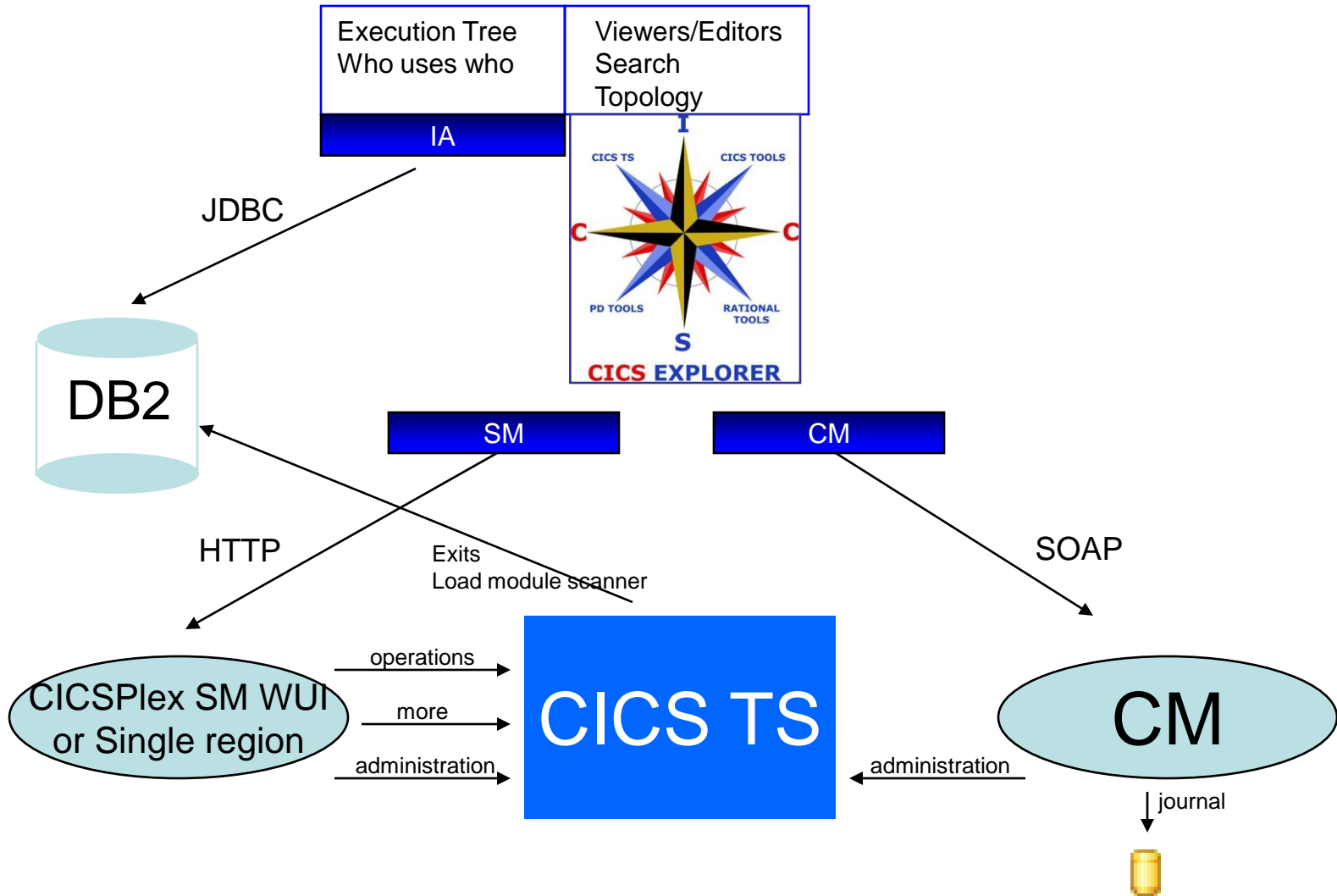
CICS TS Explorer program list

Name	Status
ACCTCHAN	ENABLED
ACCTTEST	ENABLED
ADNCRDR	ENABLED
ADNCRDS	ENABLED
ADNTMSGH	ENABLED
BACEDALP	ENABLED
BACEDAP	ENABLED
BALAB6P	ENABLED
BAWYMQ	ENABLED
BAWYMQP	ENABLED
BA1DPLP	ENABLED
CBCDEBUG	ENABLED
CHANELLE	ENABLED

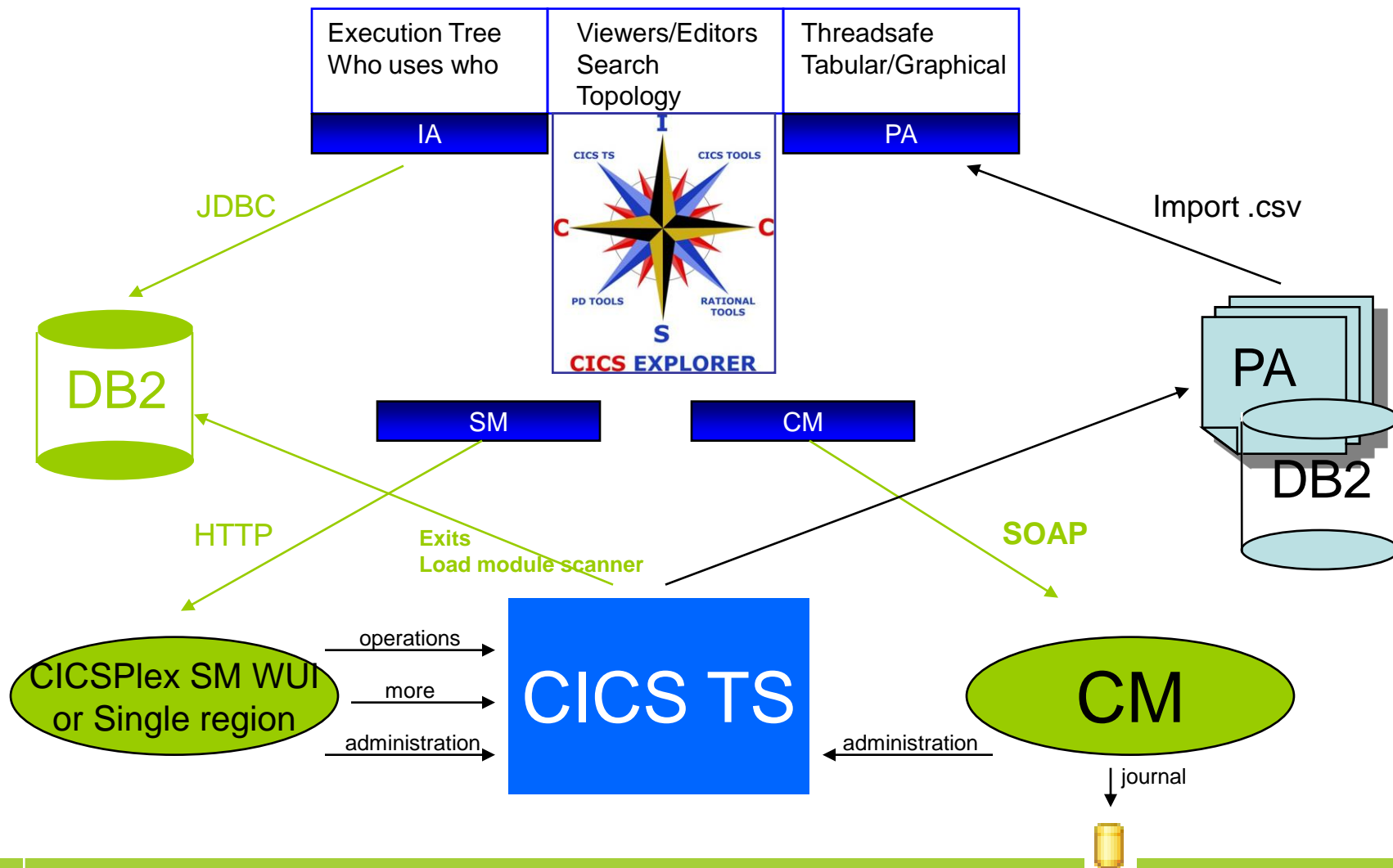
The whole exceeds the sum of the parts – CICS & CICS CM



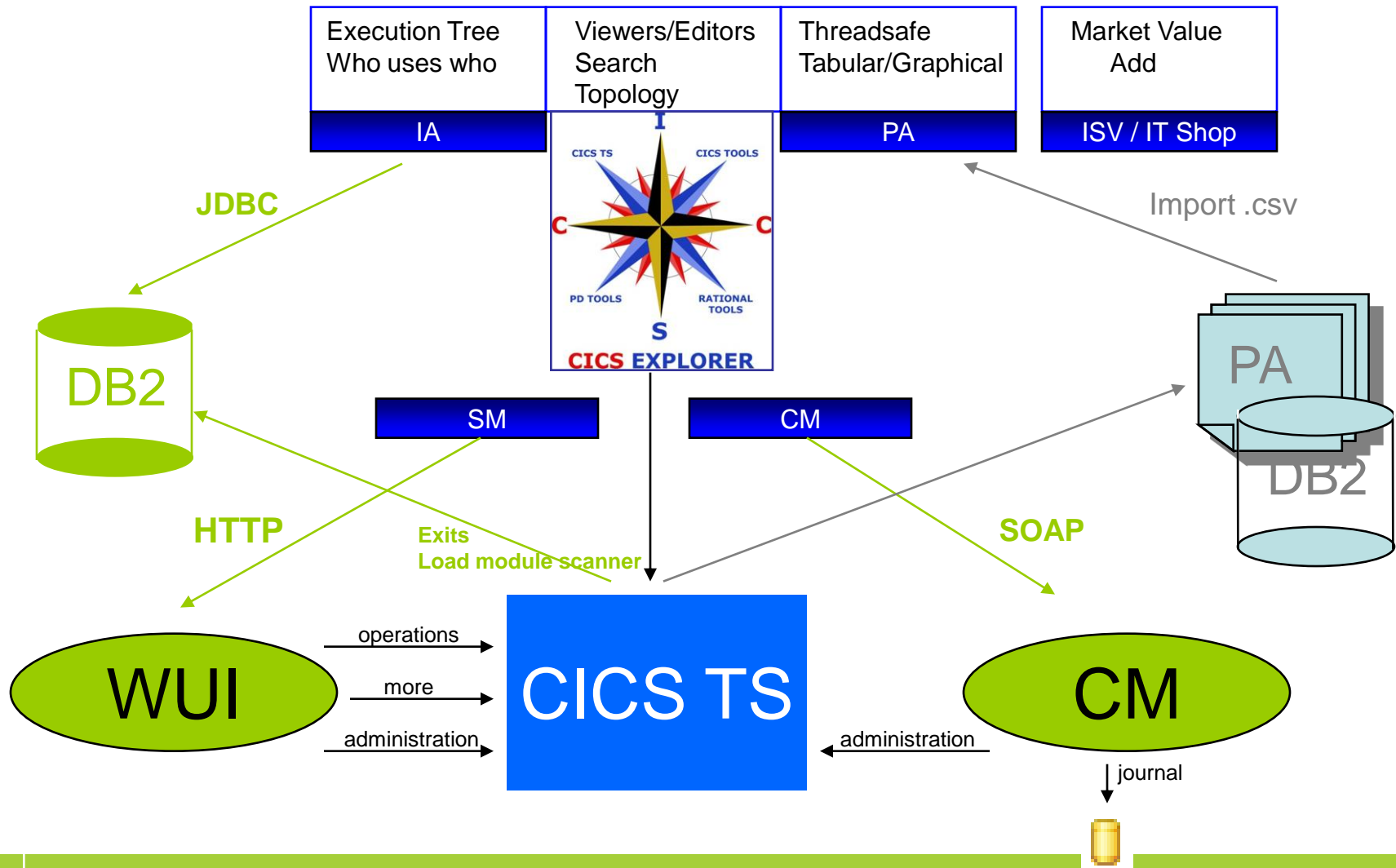
The “single new face of CICS” – with CICS IA



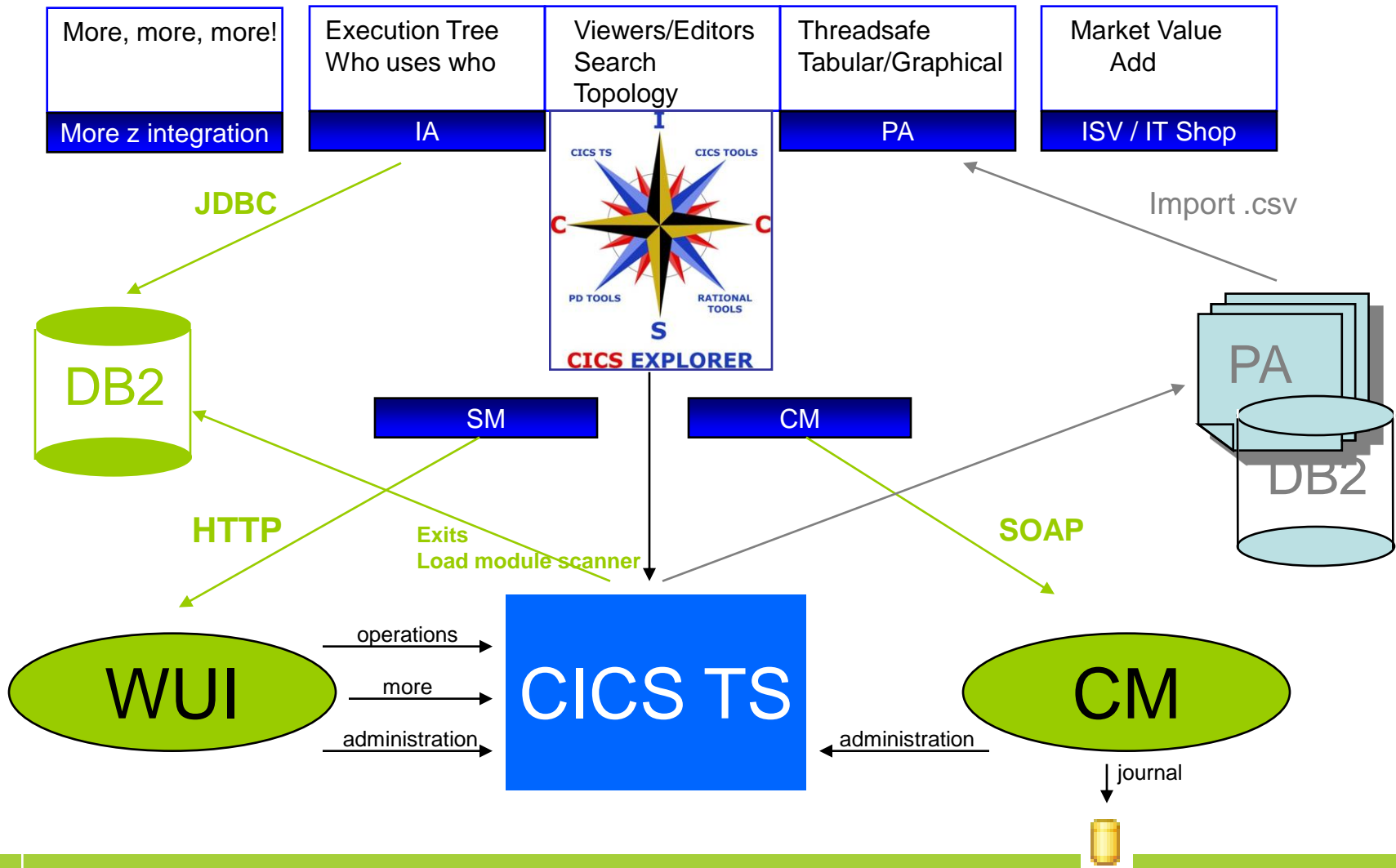
CICS PA completes the story (for now)



CICS Explorer SDK



What is next???



CICS Transaction Gateway

The screenshot displays the IBM CICS Explorer interface with several panels open:

- Gateway daemons:** A table listing various daemons such as IYCWJK1, IYCWJT1, etc., with columns for Region, Job Name, MVS System, Task Count, CICS Status, Release, Total CPU, Page In Count, Page Out Co., and I/O Count.
- Gateway daemons (Detailed):** A table showing details for CTGPW3 and CTGPW4, including Name, Status, Version, Gateway ID, Netname, Up time, TCP Port, Clients, Max pipes, and Allocated pipes.
- CICS Connections:** A table listing connections for CTGPW3 and CTGPW4, with columns for Name, Server, Protocol, Target, Default, Comms fails, Completed, Response, Active req., Allocated, and Allocate pi.
- CICS TS Explorer CTG Connection Properties:** A detailed view of connection properties for CTGPW4, including Comms fails, Default, Name, Protocol, Server, Target, and various timeout and session parameters.

CTG Gateway daemons
 Name, status, version, ID, netname, TCP port, clients, pipes, etc

CTG Connections
 Name, server, protocol, target, etc

CICS TS Explorer
CTG Connection Properties

Tivoli OMEGAMON for CICS

Currently a Proof-of-concept of CICS Explorer integration with OMEGAMON for CICS

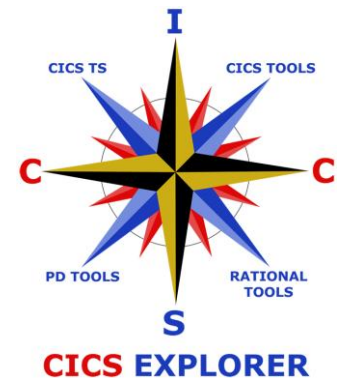
The screenshot displays the CICS Explorer application window. On the left, a tree view shows the project structure under 'Enterprise', including 'z/OS', 'CICS', and 'CICS Transaction Gateway'. The main area is divided into two tables. The top table, 'OMEG Table View', lists transaction data with columns: Origin_Node, System_ID, CICS_Name, Transaction_ID, Task_Number, Termid, CICS_SYSIDNT, and User_ID. The bottom table, 'OMEG Situation View', lists system components with columns: HSITNAME, HNODE, ATOMIZE, HGBLTMSTMP, HLCLTMSTMP, HORIZINNODE, PATHNAME, TYPE, and HC.

Origin_Node	System_ID	CICS_Name	Transaction_ID	Task_Number	Termid	CICS_SYSIDNT	User_ID
MV2C.WUIJT4A	MV2C	WUIJT4A	CSOL	00004	n/a	JT4A	n/a
MV2C.WUIJT4A	MV2C	WUIJT4A	CSSY	00005	n/a	JT4A	n/a
MV2C.WUIJT4A	MV2C	WUIJT4A	CSSY	00006	n/a	JT4A	n/a
MV2C.WUIJT4A	MV2C	WUIJT4A	CSTP	00008	n/a	JT4A	n/a
MV2C.WUIJT4A	MV2C	WUIJT4A	CONL	00019	n/a	JT4A	JT1
MV2C.WUIJT4A	MV2C	WUIJT4A	CSSY	00020	n/a	JT4A	n/a
MV2C.WUIJT4A	MV2C	WUIJT4A	CSHQ	00022	n/a	JT4A	n/a
MV2C.WUIJT4A	MV2C	WUIJT4A	CSNE	00024	n/a	JT4A	n/a
MV2C.WUIJT4A	MV2C	WUIJT4A	CISR	00025	n/a	JT4A	n/a
MV2C.WUIJT4A	MV2C	WUIJT4A	CISE	00026	n/a	JT4A	n/a
MV2C.WUIJT4A	MV2C	WUIJT4A	COVG	00028	n/a	JT4A	JT1
MV2C.WUIJT4A	MV2C	WUIJT4A	CO10	00181	n/a	JT4A	JT1
MV2C.WUIJT4A	MV2C	WUIJT4A	CO1E	00182	n/a	JT4A	JT1
MV2C.WUIJT4A	MV2C	WUIJT4A	COVA	00273	n/a	JT4A	JT1

HSITNAME	HNODE	ATOMIZE	HGBLTMSTMP	HLCLTMSTMP	HORIZINNODE	PATHNAME	TYPE	HC
Crypto_Service_...	WALKER:CMS		109022016002...	109022016002...	MVSAA:MVA...		0	
Crypto_Internal...	WALKER:CMS		109022016002...	109022016002...	MVSAA:MVA...		0	
Sysplex_DASD_...	WALKER:CMS		109022016095...	109022016095...	MVSAA:MVS:SY...		0	

Summary

- Easy-to-use, Eclipse-based interface
- Rich edit and view capabilities
- Productivity for experienced and new CICS users
- View CICS V3, view and update CICS V4
- Tools integration



Thank You

Any Questions?



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